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YOKOHAMA, SATURDAY, MAY 30, 1874.

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TO SUBSCRIBERS.

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It is requested that notice of the intention to discontinue a subscription be so given as to reach Yokohama *before* the date of its effluxion.

MARRIAGE.

At the British Legation, Yedo, on the 22nd May, by the Rev. W. Wright, M.A., WM. CRAIGIE, M.A., Professor of English, at the Imperial College of Engineering, Yedo, to JESSIE COWAN, second daughter of the late HENRY SYNE, Esq., Ayr.

At H. B. M's Legation, Yokohama, on the 23rd instant, by the Rev. William W. Parry, of H.M.S. *Iron Duke*, HENRY DYER, C.E., M.A. &c., Principal of the Imperial College of Engineering, Tokei, to MARIE AQUART, eldest daughter of D. Ferguson, Esq., Glasgow.

CHASTEL DE BOINVILLE—COWAN. On the 23rd instant, at the French Consulate, and afterwards at H. B. M's Legation, Yokohama, in the presence of Sir Harry S. Parkes, by the Revd. William W. Parry of H. M. S. *Iron Duke*, CHARLES ALFRED, eldest son of Revd. C. A. CHASTEL DE BOINVILLE of Kingston on Thames, to AGNES, youngest daughter of W. COWAN, Esq., Banker, Ayr.

Notes of the Week.

AN occasional correspondent at Nagasaki has favoured us with the following telegram which is dated this morning:—

The *Nepaul* has returned from Formosa. A few Japanese soldiers were surprised by the savages, and one of them killed, upon which a general attack on the savages ensued, resulting in much slaughter and about 50 killed or wounded amongst the Japanese. The Viceroy of Fohkien visited General Saigo and was very friendly. He promised every assistance to the Japanese. No complications whatever expected from China.

WE have been favoured with a translation of the Japanese Financial Statement for the year 1874, but it reached us so late in the week that we have been unable to publish it in our present issue. We may observe meanwhile, that a short and very misleading epitome of it has been published elsewhere, some features of which have already drawn a fire of small shot against it. This is, however, so far as we can yet see, not due to the statement itself, but to the inadequate manner in which it has been placed before the Public. It is a far more elaborate document than the Budget of last year, and requires more careful analysis. We shall not regret a delay in its publication which gives us the opportunity of criticising it more searchingly than we could otherwise have done, and perhaps of throwing light upon obscure or difficult points in it the elucidation of which is only just to the Government and will be useful to the public.

THE detention of the P. M. steamer *Great Republic* last Friday week arose out of the following circumstances.

Mr. Mitchell, the U. S. Vice-Consul, notified Mr. Center, the Agent of the Company, on the 15th instant, that he wished to

send home twenty-six destitute seamen, agreeably to the provisions of the U. S. law applicable in such cases. Mr. Center replied that it would be impossible to take them as the ship had already her full complement of passengers on board, and that by doing so he would violate the Emigration Act which specifies the number of passengers per measurement ton which any vessel is permitted to carry. Mr. Mitchell replied that he did not consider these men passengers within the meaning of the Act, and that he should detain the ship's papers until his demand was complied with, notifying at the same time the penalties to which the Company was liable for refusing the demand. Mr. Center replied that while he did not dispute the obligations he was under to take the men, it was impossible for him to do so in this case from the fact that the vessel was already carrying as many people as by law he was justified in carrying. Mr. Mitchell rejoined that he disclaimed any intention of compelling the Company to violate the law, and would endorse the certificate of passage to the effect that the men were taken under protest, but he insisted that they should go, and reiterated his threat in regard to the ship's papers. The Company ultimately refused to take the men on the grounds above given, and Mr. Mitchell stopped the ship in accordance with his threat. The papers were released by a negotiation providing that the P. M. S. Co. should pay the expenses of the maintenance of the men between the date of sailing of the ship and the arrival of the *Alaska* a fortnight afterwards, by which vessel it was agreed that they should be sent home.

We are clearly of opinion that while Mr. Mitchell was quite justified in his application to the Company to take the men, he was unreasonable in pressing it when the vessel arrived, and it was found out that she had already more than her complement of passengers on board. The space required by twenty-six Europeans is very considerable in even a large vessel already quite full, and the inconvenience of such over-crowding as would have resulted from carrying them would amount almost to a danger. Mr. Mitchell's position was manifestly one of dilemma. If he did not press his demand on the company vigorously, the U. S. Government would blame him for incurring the expense of the men's keep. If he did press it, he would be compelling the Company to break the provisions of the Emigration Act. The position of the Company involved a similar dilemma. It acknowledged its obligation to take the men, but pleaded that if it kept one law, it must break another. It chose well, we think, and refused to break the Emigration Act, agreeing to abide by the decision of the U. S. authorities at Washington in respect of its liability to pay the keep of the men during the interval between the sailing of the *Great Republic* and the arrival of the *Alaska*. But it is much to be regretted that this compromise was not arrived at a few hours earlier, so that the detention of the vessel might have been avoided, and in view of the manifest difficulty in which the Company was placed, Mr. Mitchell might well have made the requisite overtures.

IN spite of fine weather, and much good effort on the part both of the Committee and rowing and sailing men, the Regatta of Saturday last was inexpressibly torpid. A little mechanical gaiety was got up by dint of hard work, but to make a Regatta go off well you want twenty times as many nice-looking, well-dressed, and new people as you could get together if you brought every foreigner in Japan into the field, and every foreigner answered our description. The interest in rowing is spread over too many events and over too long a time. After the first twenty strokes there is an inter-

val of hideous dullness until the last twenty; and though, of course, there is a certain satisfaction in walking about in a blue serge suit, a shiny hat, and with a telescope under your arm, every properly constituted landsman who does this must feel that he is a terrible impostor for the day, and can only eat his luncheon with an enforced gaiety and appetite, the artificial nature of which is very easily seen through. Perhaps it is right to have Regattas, and they may be deemed a necessary part of the great scheme of things. But they help very much to enforce Sir George Lewes's saying that life would be tolerable enough but for its pleasures.

THE past fortnight has produced an abundant crop of cases of drunkenness in the consular courts, which have suggested some remarks elsewhere. This luxuriance is not flattering either to our social or our commercial morality, and our reputation is concerned in checking it.

THE announcement made by telegram of the intended promotion of Mr. von Brandt from the Legation at Yedo to that at Peking will be received with mingled feelings of satisfaction and regret. The bestowal of a deserved honour upon the German Minister Resident will produce the one; the other will be felt by all whom social intercourse or business relations have brought into contact with him. No one who has had the advantage of Mr. von Brandt's acquaintance can fail to have been struck with, though all may not have fully appreciated, his large store of information, the intelligence with which it was generalized, or the easy, ready and genial manner with which it was imparted. The politics, religions, customs, antiquities and industries of Japan have found in him a laborious and indefatigable student, and it is mainly to his exertions, well seconded as they have been by his collaborateurs, that the Germans in this country owe the establishment of that Society for the collection and diffusion of knowledge regarding Eastern Asia which does so much credit to them.

The sphere to which Mr. von Brandt will shortly be removed is one of larger activity and interest, and presents new fields of investigation in many departments of human knowledge. The contrast between an ultra aristocratic and very democratic form of society cannot but be interesting to the student of political philosophy, while the modification among the Japanese of the parent forms of thought transmitted to them from the Chinese, cannot fail to force itself on the mind of one who has given as much attention as has Mr. Von Brandt to Japanese questions. His departure from Japan will deprive the diplomatic body of an experienced and able colleague, and society of a member whose presence never failed to enliven, adorn, and instruct it.

TIME has failed us this week to expose the shameless untruths sent as news from this country by some of the correspondents of the American press. But we cannot allow the following item of intelligence to pass—without comment:—

“CURIOUS DIPLOMACY.”

“One of the peculiar acts of diplomacy committed by the representatives of foreign powers here has just come to light. It was the suppression in publication in Yokohama of the most important portion of the Mikado's reply to the address presented to him by the aforesaid Ministers at their audience on New Year's Day. Their address was published in full, while the most important portion of the reply, reflecting on the course adopted by the foreign representatives, was omitted.”

So far from this being true, the reply of the Mikado to the address of the Foreign Ministers published in our issue of the 28th March, contains every word of His Majesty's speech. The character of the correspondent of the *Bulletin* whoever he may be—can be inferred from this fact.

WE hear on good authority that the Japanese have removed all restrictions upon the exportation of silk-worms' eggs, and that entire liberty has been given to the producers in regard to the quantity they may prepare.

THE preliminary arrangements for the reduction of the Railway fares not being yet completed, it is announced that the new scale of rates will not come into operation until the

15th proximo. We observe that it is intended to bring a reduced tariff for the conveyance of goods into force on the same day.

HER MAJESTY's birthday was commemorated on Tuesday, in the usual manner. The *Iron Duke* saluted at noon, and was answered by the U. S. ships *Lackawanna* and *Hartford*, and a *feu de joie* was fired by the Battalion of Royal Marines at the Camp. Sir H. S. Parkes gave a ball in the evening.

THE following scores have been made by our local riflemen in the shooting match between Yokohama, Shanghai and Hongkong, and give good reason to hope that the honours will once more fall to Yokohama:—

	400 yds.	500 yds.	600 yds.	700 yds.	800 yds.	Tot.
Townley	34	34	34	35	37	174
Duncan.....	36	35	33	38	31	173
Barnard.....	37	34	31	37	30	169
Dalliston.....	36	37	31	28	28	160
Benson.....	33	31	27	33	29	153
Vivanti	35	28	28	35	24	145
Grand Total ..	..	..	..	..	..	974

ADMIRAL PENNOCK, commanding the United States Navy on this station hoisted his flag on the *Hartford* yesterday. The usual salutes were fired by the other men-of-war.

THE UNFORTUNATE Kaitakushi steamer *Kuroda*, on her last trip to Yezo got ashore again. It is but a short while since she went aground on Saratoga Spit. The want of a Mercantile Marine Examining Board for Japan shows itself badly.—*Gazette*.

IN the *Rising Sun*—a Nagasaki paper—of the 22nd May, there is a communication which not only bears a striking resemblance to that which appeared in the last issue of the *Japan Weekly Mail* on the Formosa Expedition, but many sentences of which are nearly word for word identical with parallel passages in our own copy. The document would appear to have been produced at Nagasaki and somewhat altered and expanded here. It has, however, two references to the Yokohama journals, whereas our copy only contained one; and it impugns the information on which those journals discussed the subject. This issue can only be adjudged when we hear from Peking what the Chinese have to say of the expedition; but meanwhile the Japanese may be assured that the Yokohama journals have very faithfully reflected the best informed and universal opinion on the subject of the expedition. The future will declare who was right.

Okubo leaves in a day or two for Formosa with Imperial despatches.

Kido leaves to-day for his own country.—*Gazette*.

THE Flower Show held last Saturday afternoon attracted a large number of visitors, and aided by the excellent band of the *Iron Duke*, passed off with much success. The exhibits of the bouquets were disposed of at the close of the day for the benefit of the Gardens, and the energetic *entrepreneur* proved himself a skilful auctioneer.

JAPAN has come out extremely well at the Vienna Exhibition and earned a large share of the diplomas of honour and of merit awarded by the judges.

THE Japanese Iron-clad Ram *Azuma-kan*, returned again to port on Monday last from Kagosima. She brought hither some five hundred more Satsuma soldiers who are to join the Formosa expedition; she left this morning for Amoy. The soldiers were landed at the Ohato, and were quartered in different parts of the town of Nagasaki, but they were re-embarked on board the steamers *Delta* and *Shafesbury* during the week.—*Express*.

THE Captain of the Japanese steamer *Shafesbury* appears to be bent upon distinguishing himself. Yesterday afternoon

the vessel, which is entirely in charge of natives, left this harbour for a trial trip, previous to starting on her voyage to Formosa. On returning to the anchorage she ran into the British barque *Mistletoe*, and did considerable damage to the port-side of that vessel. Previous to the collision the steamer had run against the P.M.S.S. Co.'s barge *Shamrock*, but fortunately did very little damage to her.—*Express*.

We hear that advices have been received here during the week from the Japanese expedition to Formosa, but from the information we have been able to gather it does not appear that hostilities have commenced; neither does it appear that any are intended unless the natives become troublesome. It would appear that the intention is to annex and colonize that part of Formosa not immediately under the control of Chinese authorities and to hold it as a guarantee for the future good behaviour of the inhabitants.

By the steamers *Shaftesbury*, which leaves this evening, and the *Delta* to-morrow morning, a large number of native artisans, comprising carpenters, blacksmiths and others connected with the building trade, are to be despatched there for the purpose of erecting the buildings for the accommodation of the troops.—*Express*.

THE P. & O. steamer *Delta*, which arrived here from Shanghai on the 10th instant, has been sold during the week to the Japanese Government, and will be employed in the Formosa Expedition. The price paid for her is one hundred thousand dollars, and she changed her flag on Tuesday last, on which occasion two guns were fired. The crew, which has been quartered in the building next door to the Sailor's Club, left to-day for Shanghai by the British steamer *Lap Tek*. The *Shaftesbury*, which was sold last week for sixty thousand dollars, and also the *Delta*, are being laden with stores, &c., for the Expedition, and will convey the remainder of the soldiers to their destination. The total number will be about two thousand soldiers and workmen. Saigo, chief in command, who proceeds with the troops, will leave to-morrow morning by the *Delta* and the *Shaftesbury* left this afternoon, direct for Formosa, at which place, we learn, several of the vessels forming the expeditionary squadron have arrived. Okuma, Minister of Finance left yesterday morning by the P. M. steamer *Golden Age* for Yokohama, and from thence he proceeds to Tokio. Negotiations for the purchase of the British steamer *Lap Tek*, were also pending during the week, but these have been suspended.—*Nagasaki Express*.

PEKING.—A Japanese Legation is to be formed at Peking. The members of it are now on their way to the Chinese capital. Mr. Takao, formerly Interpreter Foreign Department Tokyo, goes as Secretary to the Legation, having been appointed for a term of three years. The Japanese government are to be congratulated upon taking this step, which must tend to preserve peace and friendly intercourse between themselves and the Chinese.—*Rising Sun*.

THE "DELTA."—This steamer left here with troops, stores, and ammunitions for Formosa, on Sunday morning last at about 11 o'clock under a salute from the government battery. General Saigo went in the *Delta*. The *Shaftesbury* also left on the previous day.—*Rising Sun*.

Statement of Passenger Traffic conveyed over the Kobe and Osaka Railway for six days ending May 16th, 1874.

No. of Passengers: 1st, 251½; 2nd, 882; 2rd, 7,628½; Total, 8,762. Amount, Yen 3,496.77½. Parcels, Yen 38.41. Total amount, Yen 3,535.18½.—*Hioigo News*.

We are glad to be able to state that a second and third cable have been successfully laid across the Shimonoseki Straits, by Mr. FOSTER (electrician) and Captain TAYLOR, captain of the S. S. *Denshimaru*.—*Hioigo News*.

THE COLLISION.—We are given to understand that the owner of the *Mistletoe*, claims from the Japanese government the sum of \$6,000, on account of damage done to that vessel by the *Shaftesbury* which ran into her on Saturday last. The accident

was caused by the stupidity of those in charge of the Japanese vessel, therefore the owner of the *Mistletoe* is more entitled to damages than if the collision had occurred from other causes.—*Rising Sun*.

SHIPPERS OF SILK.

Per S. S. *Behar*, despatched 27th May, 1874.

	England.	France.
Raud & Co.	10	21
Sundries	14	8
	24	29
Total... ..	53 Bales.	

IMPERIAL GOVERNMENT RAILWAY.

YOKOHAMA STATION.

26th May, 1874.

Statement of Traffic Receipts, for the week ending Sunday, 24th May, 1874.

Passengers.....31,666 Amount.....\$8,985.37
Goods, Parcels &c..... 711.52

Total.....\$9,696.89

Average per mile per week..... 538.72

18 Miles Open.

Corresponding week 1873.

Number of Passengers 33,480 Amount \$9,734.60

THE FORMOSA EXPEDITION.

Pol. As thou lovest me, Camillo, wipe not out the rest of thy services, by leaving me now: the need I have of thee, thine own goodness hath made; better not to have had thee, than thus to want thee: thou, having made me businesses, which none, without thee, can sufficiently manage, must either stay to execute them thyself or take away with thee the very services thou hast done: which if I have not enough considered, (as too much I cannot,) to be more thankful to thee, shall be my study; and my profit therein, the heaping of friendships.

WINTER'S TALE, ACT IV., SCENE I.

IT was impossible not to have a liking for Mr. DE LONG. He was so merry and told his Western stories so well. There was a mixture of seriousness and humour about him which could not but amuse and please. He buzzed about with so much merry good-will as to be irresistible. If he flew in your face now and then, he did it in the best temper; and if we did not quite respond to this on one or two occasions, perhaps our own humour was at fault. Whether or not he took very serious views of human affairs, or of the relations between nations, is more than we know from his own mouth. But we have a suspicion that he regarded them in an airy, gay, pleasant manner, and that if they did not go very well in fact, he had a pretty talent for making them look well on paper. That they must have afforded him a certain amount of amusement seems to us certain. He unbent his mind over them, as other people do over whist, music, or works of fiction. They were his bowling alley, and as he rolled the ball merrily along, sometimes making a "double spare," and sometimes going right off the track, he enjoyed the game and clapped his hands, not greatly regardless of the result of his efforts. We parted with him in such good humour, however,—as did every one else,—that we have not the heart to say anything greatly to his prejudice. But if ever his ball rolled off the alley and pulled down his score, it never did so more completely than when he set to work on the business which ultimately resulted in the Formosan Expedition.

If our readers will turn over a few pages of our present issue they will find a correspondence dating from and disclosing the very conception of this business. In the first letter we find Mr. DE LONG addressing Mr. FISH on the subject of an interview he had had with the Japanese Minister for Foreign Affairs regarding the obligations which Japan had assumed in relation to the United States Government, by the incorporation into

the Empire of the kingdom of Lewchew. In the course of this interview Mr. DE LONG learned that the conduct of the Formosans had irritated, if not exasperated, the people of Japan, and that the question of their punishment was under consideration. The matter presented some difficulty, but "Heaven helps those who help themselves," and a knot worthy to be untied only by a God—we speak as pagans—brought General L. P. LE GENDRE, United State consul at Amoy, on to the scene, with a complete set of maps, charts, photographs &c. of the coast, main-land and people of Formosa, under his arm. If this was not what is called "Joss-pigeon" in Anglo-Chinese, there never was a case of it. It was like the appearance of the good genii in the Arabian Nights. The charts and photographs were waved over the heads of the of the Japanese, the magic words were uttered, and the spell began to work. From the punishment of the Formosans, the vision expanded into the programme unfolded by our anonymous and mysterious contributor of last week. The buccaneering expeditions of Japan to the China coast of two centuries past were forgotten, and the Muse of History turned away her face with a blush when the statement was made in her name that for more than a thousand years there had been an almost uninterrupted peace between China and Japan. (What would the Emperor Kang Hi have said to this!) Japan in concert with China had designs to give new life and vigour to Eastern Asia. The occupation of the "Beautiful Island" by the Japanese would constitute the call to China to abandon her indolent, proud, and stolid attitude; and the alliance of the two Empires, working in harmony in a field so fair that it constituted a temptation to the Western powers to come and seize it, would for ever keep Formosa in Asiatic hands, and prevent its being held as a pistol at the head of those near whose territory it lay, and whose right to it was drawn out in a patent of Heaven's own signing. The old military spirit of Japan revived at the thought of sending out fleets and armies to conquer and occupy a large and splendid new possession. The *samurai*, long rebellious against an enforced idleness which a little diplomacy only was necessary to dispel, saw in the scheme a prospect of employment, pay, and enterprize. The Cabinet saw a means of amusing the newly constituted army, giving the navy a taste of the open ocean, and ridding the country, for a time at least, of a turbulent soldiery, impatient of discipline, and irritated by rumours of outrages perpetrated on those whom it was their business to protect and defend. And, if we add one other motive power to all these, we shall hardly greatly err. The heaven-descended magician himself—no more a genii or an immortal than Professor VANEK—was doubtless retiring from one of those four years' engagements which the United States, in its wisdom, scatters broadcast among that vast abundance of military officers out of which the most pacific Government in the world recruits its staff of humble consular servants, and whose titular rank shows a strange tendency to grow in a direct ratio with the distance of their expatriation. General LE GENDRE must not be blamed for accepting an agreeable retreat from the precarious service of his ungrateful country, nor for rating highly knowledge which his new masters had been given to understand was of a kind of angelic and heaven-sent nature, capable of going before them like a cloud by day and a pillar of fire by night. But it is fair to presume that the wizard laughed in his sleeve at the success of his wand, and that Mr. DE LONG and he, when all doors were closed and all danger of listeners was removed, gave themselves over to paroxysms of that kind of laughter which

the Roman augurs are said to have enjoyed when alone together.

The letter to Mr. FISH, however, met with a dry and sensible retort. The SECRETARY OF STATE did not see his way to approve or disapprove of Mr DE LONG's course of action, and wanted further particulars—of which, at this time, we have no record. He so far wrote courteously of General LE GENDRE, however, as to relieve him of the title attached to his name by Mr. DE LONG, exchanging it for that more customary among unwarlike gentlemen.

And now we must shift the scene to the Legation of the United States at Peking, and claim the attention of our readers for Mr. Low's letter to Mr. FISH. From this it will be seen that Mr. LE GENDRE—as we shall henceforth call him, for we can have no wish to deprive him of his legitimate title—called on Mr. Low on his arrival in the capital, studiously impressing on the Minister the unofficial character of his visit. Mr. Low was, however, not long in discovering that his visitor's object was to intimate that the Japanese Ambassador would insist that his superior rank should be recognized by all the Ministers in Peking, native and foreign; in other words, that he should expect all the foreign representatives and the Chinese Ministers, including PRINCE KUNG, to call upon him. (Is there not an American expression of a vulgar nature, 'How's that for high?' We have never exactly been able to understand it, but we cannot repress the suspicion that it is somehow applicable to this case). Mr. Low seems to have pointed out to Mr. LE GENDRE the extremely unreasonable and inopportune nature of this demand, and the unlikelihood of its being complied with; and, in order to cut this part of the story short, we may as well say at once that the JAPANESE ENVOY, seeing the false position in which he had been placed by this demand, made, with entire propriety, the first call on the foreign Ministers, though Mr. Low records the warmth with which Mr. LE GENDRE affirmed that it would be derogatory to the dignity of the JAPANESE ENVOY were he to recede from the position indicated, as well as the indecorous threat used in the hope of carrying the point. We are sorry for SOYEJIMA, for, as GOLDSMITH said to Lord SHELBURNE of MALAGRIDA, "Malagrída was a very good sort of a man,"—a criticism which certainly does no injustice to the late excellent Minister for Foreign Affairs. It will be observed, too, that all the foreign representatives declined most emphatically to yield to what they considered an unauthorized assumption put forward by the ENVOY or his counsellor, or both; and that to the long written memorandum on the whole subject submitted by Mr. LE GENDRE to the Russian Minister—General VLANGALY—neither reply nor notice was vouchsafed. The postscript to Mr. Low's letter recounts in a dozen words the fate of this negotiation, over which, with our readers' leave, we will now draw the veil.

Finally, we have a letter from Mr. SHEPPARD, U. S. Consul at Tientsin, to Mr. Low, giving a very full account of the interchange of visits between LI HUNG CHANG and the JAPANESE ENVOY. "Who is this foreigner, and what is his business here?" was the question reported to have been asked by the Viceroy concerning Mr. LE GENDRE. He added, that he could not recognize him in any official capacity, and his manner to him, says Mr. SHEPPARD, was studiously cold and uncourteous. With bitter and insulting irony, however, he saw fit, on the occasion of the last interview, to treat Mr. LE GENDRE with an extravagant politeness only equalled by his former incivility and rudeness,—small personal matters which we should not have been at the trouble of recording, though they

are not without features of passing interest, but that very shortly after the return of the Japanese Embassy from Peking, an account appeared in one of the local papers of the particulars of the interviews and conversation between the VICEROY and Mr. LE GENDRE, in which, had they been long lost brothers, they could not have been depicted as more affectionate and fraternal. "Read me anything but history," said Sir ROBERT WALPOLE to his Secretary, when in want of some amusement, "whatever else may be true, that *must be false*."

And now, what will the Chinese do? Will they not say something of this kind?—If the Japanese are permitted to remain here, we shall have some of the Western barbarians coming one of these days and doing the same thing on the same pretext. We have no great objection to letting the Japanese chastize—if they can get at them—these aboriginal savages, upon whom we have tried our own hands with very little success. But as to any subsequent occupation of the Island, we cannot possibly suffer it. It is inconsistent with our dignity and incompatible with our unquestioned right of sovereignty. As soon as these Japanese have had a good taste of bush fighting, of jungle-fever, and of the pleasures inherent in this kind of military enterprise, we must warn them off the ground, and when we do this, they must go, or.....

THE EVERLASTING QUESTION.

MR. ROBERTSON, in his exhaustive Report on the Trade of Yokohama during 1873, takes the opportunity of recommending the appointment of an Inspector of Markets, an appointment, he says, which he urged some time ago on the Japanese Authorities. "Anyone," he remarks, "who has seen a Japanese butcher's shop, will agree with me that there is good work for an Inspector in that direction."

The suggestion is a good and practical one, and we shall be very glad to hear that it has been adopted; not only for the benefit of purchasers of food in the Japanese market or butchers' shops, but that, the experiment resulting in a success in this one direction, the plan might be extended, and another class of tradesmen brought under similar wholesome supervision. No one can read our daily papers without noting the constant recurrence of "drunk and disorderly" cases in the Consular Police Courts. The victims are generally sailors, and we do not hesitate to say that, in proportion to the number of seamen afloat in the harbour, the average is much higher than in any seaport town in the United Kingdom or America. There must be a reason for this, and we have indicated it, according to our belief, by the application of the term "victims," instead of "offenders," to the unfortunate men whose drunkenness and disorder excite our compassion. The real offenders escape—the vendors of the variety of poisons sold in grog-shops, both foreign and native, under the dishonoured names of brandy, whiskey, rum and gin. We believe that it is the quality, far more than the quantity, of the liquor drunk by our sailors and marines, which is responsible for most of the disorder and drunkenness, and an Inspectorate of grog-shops, strictly and impartially carried out, would do quite as much good as an Inspectorate of markets and butchers' shops. A pamphlet has lately come under our notice, detailing the cure of precisely the same evil by very simple means in another part of the world, and we propose to review it in the hope that the Japanese Government, the Board of Consuls and the Municipal Director may consider whether the application of the remedy here is not possible. It would certainly be attended with the same beneficial results.

Among the many fallacies conclusively demonstrated by statistics to be facts, was long the theory that intemperance was a question of latitude; and statisticians triumphantly pointed to the circumstance that Scotland was the most drunken country in Europe—except Sweden, as an illustration of this beautifully simple natural law. And a pet phrase of the "common sense" school of social economy is: "You can't make a people virtuous by Act of Parliament." Common sense economists and statisticians have alike been convicted of error within the last few years: Scotland enjoys the bad pre-eminence in drunkenness without a rival, and an Act of Parliament has not only made Sweden sober, but has enabled its poor-rates to be paid by its liquor traffic. What a relief to the Japanese Municipal exchequer, if by the adoption of the law in Yokohama, the profits of the taverns paid the expenses of the police!

Free trade in liquor, unchecked by any legal restrictions, was the cause of the drunkenness in Sweden. In the latter half of the fifteenth century, spirits came into use in Scandinavia, and the taste for them rapidly grew, in spite of prohibitions by such great and wise kings as GUSTAVUS VASA and GUSTAVUS ADOLPHUS. CHARLES THE TWELFTH was a total abstainer, drank nothing but water and milk, and compelled his people, so long as he could, to follow his example. But during his wars abroad, his Ministers at home suspended his ordinances, on the pretext that spirits mixed with garlic were a preventive of the plague, and the trade, after his death, was made entirely free. Every landowner was allowed to distil spirits for domestic use on payment of a nominal license fee; and, unfortunately, an idea became prevalent to confirm this pernicious system, that the distillation of spirits was a necessity for the encouragement of agriculture. The result was, that in 1830, with a population under three millions, there were 173,000 stills in the country! No computation could be made of the quantity produced, as no duty was levied on the product; but in 1850, when a careful calculation was made of the product of the reduced number of stills then existing—44,000—it was found to be 30,000,000 gallons, or about 10 gallons a head, for every man, woman, and child in the country!

It was in 1855 that the law was passed which initiated reform. The small stills for private use were abolished, the smallest daily average quantity allowed to be distilled being 172 gallons. The right of all persons to sell "brännvin," the usual drink, in quantities of three-fifths of a gallon, was also abolished. Thus, from being a domestic manufacture, offering daily temptation, and ensuring a most pernicious education in dram-drinking from the very cradle, the distillation of spirits was erected into a controllable trade, which was the first great step towards temperance. Then a proper licence system was inaugurated, similar to that now in force in England. Grocers and other shop-keepers were licensed to sell, by the bottle, spirits and wines for consumption at their customer's own houses, and public houses were licensed to sell liquor "to be drunk on the premises." Into the details of the Act we need not enter—there are rather more restrictions on the traffic than in England—but we must mention two excellent provisions—one that no debts for brandy are recoverable at law; the other, that no sale is permitted, (except at meal times, and to persons taking meals *bonâ fide*), within three-quarters of a mile of any place where a public auction, fair, market, militia muster, or other inducement exists to collect together a large number of people.

The result of the law was the reduction of the number

of stills, from 30,000 in 1855, to 4,500 in 1860, and, in 1869, to 457. The production fell from thirty millions of gallons to seven millions.

But it was found that the chief improvement was noticeable in the country districts, and that, in the towns, drunkenness was still comparatively prevalent. It was easier there to evade the law, and drinking on credit, though the debt was not legally recoverable, was common; so prevalent, indeed, that often, when the public-house bill was paid, at the end of the week, the workman had little of wages left for the support of his family. Moreover, the liquor was badly adulterated, and altogether, the poorer town population did not much benefit by the new law. In 1865, the attention of the Gothenburg community was directed to the constantly increasing pauperism in their midst, and the result of their investigation, showing that this was almost entirely due to intemperance, the admirable system of regulating the liquor traffic was invented, which we should like to see introduced into this town.

The two great principles enunciated by the Committee which reported to the Gothenburg community, as the basis of a plan of reform, were: first, that no single private individual should derive any gain from the sale of spirits; and second, that spirits ought not to be drunk without the accompanying consumption of solid food. These principles were recognized as sound, and a system was created which has carried them into practice, reduced intemperance, disorder, pauperism and crime in Gothenburg to a *minimum*, and altogether relieved the burghers of what poor-rates there are left to pay. It has since been extended to all other towns in Sweden, and has produced everywhere the same beneficial results.

The system is a simple one. A Limited Liability Company in each town, takes the whole liquor traffic into its own hands, and this Company consists of the most respected members of the community, who derive no profit themselves from the business, nor permit any one in their employ to do so. The expenses paid, including the current rate of interest for what money had at first to be advanced, the whole of the profit remaining is paid over to the town Treasury. A sufficient number of public-houses are rented, and compensation paid to the proprietors of existing licenses. The Company then puts them in charge of servants of their own, to whom salaries are paid. All liquors sold were retailed at the same price as they are purchased wholesale by the Company, a deduction being allowed of 3 per cent for leakage and breakage. The manager is debited in a pass-book for all spirits and wines received by him and credited weekly with the amount of his sales, paid into the Company's bank account. A fortnightly statement has to be rendered of the stock in hand, and the Company's inspector takes an inventory once a month, or at any other time he pleases. Besides the salary received, the public-house keeper is allowed to sell at a profit food, tobacco, and unintoxicating drinks; and he is bound to furnish cooked food at any time during the hours of business. His appointment is terminable on two months' notice; but if he breaks any of the provisions of his contract he may be dismissed at once.

The plan is found to work perfectly well. Besides the advantage of rent-free houses, and the profits of their trade in other things besides intoxicating liquors, the managers receive a yearly salary, and are well contented with their position. In nine cases in Gothenburg, where the houses are most favourably situated, the private profits of the managers are found to be sufficient remuneration without any salary at all. The reform in the conduct and habits of

the working population was apparent within a very short time after the Act came into operation. In 1864 (the year before the new system) 2,164 persons were fined for drunkenness, in 1870, the number of cases had been reduced to 1,416, with a rapidly increasing population and stricter justice. In 1864, there were 118 cases of *delirium tremens*; in 1868 there were only 54.

The financial result was equally satisfactory. Formerly, the licences were sold yearly by auction and 61 used to realize an average of £3,500 per annum to the town treasury. During the last three years, the Company have held these 61 licenses, and have paid in to the town between £10,000 and £11,000 a year. There still remain 40 licenses of which the Company have not yet got possession; these pay about £4,400; so that last year the whole amount received by the town was £15,000, a sum rather exceeding the whole amount of the poor-rate.

We need go no further at present into the details of the plan, except to state that it is found that the whole trade can be carried on without *paid up* capital. At the beginning of the year an advance is procured from a bank, for which two of the Directors give their personal security, and the returns, with accumulated profit, come in so rapidly that at the end of the year, the balance of interest paid is found to be exceedingly small. In Gothenburg it has never exceeded £35.

It is surely worth consideration by the Consular Board, or Municipal authorities, whether a trial of this system could not with advantage be made in Yokohama. It is pitiable to see these drunken representatives of our boasted civilization staggering through our streets; humiliating to read the records of our consular courts, and to think that the time of our civil officers is occupied in adjudicating cases which some better system of municipal regulation ought to diminish by seven or eight-tenths; disgraceful that the efforts of our missionaries should be neutralized by the examples of those who profess to be disciples of that very religion which these missionaries come to impart as a higher, and indeed, a divine, faith.

SUMMARY OF NEWS.

(From the Official Gazette.)

APRIL, THE 7TH YEAR OF MEIJI.

2nd.—In Gozen saki, province of Totomi, a revolving light of the first class has been established and will be put into use, from the evening of the first day of May.

The high road that leads from Ogura yeki, province of Bungo, to the province of Kiuga, Mitsnaga yeki which is situated between Funoi yeki and Yamaoku yeki, and is under the jurisdiction of Otageken, has been closed and Bekkiichi yeki has been opened.

5th.—The orders have been given to *Shi, Fus* and *Kens* to the effect that, now that Yeto Shimpei, the leader of rebellion of Saga, and others have been found, they may proceed with the daily affairs in the usual way.

8th.—The stamps of the eggs of silkworms which shall be produced for the present year, have been issued.

On the stamps there are the figures of eggs of silkworms, cocoons and silkworms themselves; and of these stamps there are two kinds, namely those which are of a grey color and have on them the words "home eggs of silk worms and the seventh year of Meiji," and those which are of green colour and have the same words written on them except the words "home" which is replaced by the word "abroad"; but those two kinds are of the same dimensions, both being 9 *bus* broad and 8 *bus* long.

A Consulate has been established at Amoy, China.

9th.—Of the rebels of Saga, the residue, Ishii Takenosuke, Tokuhisa, Yamada Heizo, etc. not yet being found, the orders have been given to *Shi, Fus* and *Kens* to the effect that they shall institute a strict search for them.

10th.—The rules of registers of Chinese residing in Japan, have been laid down, and to preserve these, rules

have been ordered to the *Shi, Fus* and *Kens* having ports opened for foreign trade. (Rules omitted here).

14th.—The orders have been given to *Shi, Fus* and *Kens* to the effect that, upon *Fukoku* (general proclamation) and *Futats* (special proclamation) being issued, twenty days are allowed to elapse from the arrival at the respective places until their promulgation over the respective jurisdictions, this allowance being necessitated by the writing and printing of the same, and it is to be supposed that after the expiration of thirty days, the people are informed of the proclamations. The authorities of every place shall therefore make and enforce some convenient regulation in order that the people may be informed of them during the stated period; the stated period for the arrival of proclamations to be as before.

18th.—Orders have been given to *Ins, Shios* and *Shi* to the effect that,—henceforth in the case where the employed foreigners who have been industrious and meritorious in discharging their duties shall be rewarded, after the expiration of the terms of engagement, within four hundred *rios*, every Government office may itself arrange this, but for the rewards to be given to those who have an extraordinary merit and which are above four hundred *rios*, they shall obtain an opinion (of the Daijokwan).

The orders have been given to *Fus* and *Kens* to the effect that—As regards the collecting the public rates, now that the expenses of the whole country must be accounted and notified to the people at large, the expenses for the sixth year of Meiji should be accounted and reported (to the Central Government) at any time not later than the next August; for the future, they should, in the same manner, be accounted every year and reported at any time not later than March of the next year. (The Kaitakushi to report the same at any time not later than May of the new year.)

And the expenses for the fifth year of Meiji have been ordered to be accounted for and reported.

24th.—Higashi Fushimi Nihon Shino, and Okubo, Minister of Home Department, have now returned from Saga ken.

Those foreigners who wish to enter the Japanese schools should not board at other schools than those in their district, unless they are within the limits of the places allowed for walking; but though out of those districts, the children of any foreigners employed in those places may become day students at the neighbouring schools.

25th.—H.M. The Mikado came to the Daijokwan to receive reports made by Higashi Fushimi Nihon Shino and Okubo, Minister of Home Department.

Orders have been given to *Shi, Fus* and *Kens* to the effect that, henceforth for the expenses of compiling Japanese geographical books, an annual expense for each jurisdiction shall be allowed of seven hundred *rios*; how ever, for the current year it should be given by the month from the beginning of the work, and the laws and rules respecting the compilation will be issued hereafter; the expenses of compilation before these orders were issued should be given separately from the above.

26th.—Henceforth in the Suiko-rio (board of navigation) the details and descriptions of marine phenomena are to be made annually; and therefore for every ship of European style, whether belonging to the government or to private individuals, the details of weather and temperature, the course of navigation and variations of the needle, should be made, as shown in the accompanying table, and forwarded to the same board by the respective Government-offices, twice in the year, June and December. (The accompanying table is omitted here.)

Henceforth in the case where the officers of Sokurioshi (the Board of Surveying) shall be sent to any place and the work of surveying is finished, stone pillars shall be placed for future reference as to the surveying points. (The figure of these pillars is omitted here.)

CONCERNING DEEP SEA SOUNDING.

BY CAPTAIN BELKNAP, U.S.N.

*Read at the Meeting of the Asiatic Society,
on the 13th May, 1874.*

The accurate determination of the depth of the sea is a problem which has long puzzled the minds of seamen and scientists, but which now seems in a fair way of satisfactory solution.

The activity of scientific research in all branches of investigation, and the needs of commerce at the present day, demanding quick intercourse between remote parts of the world by means of telegraphic communication through submarine cables, have stimulated effort in the direction of Deep Sea Sounding, and finally made easy and indisputable a work which had hitherto been difficult and unreliable.

We hear no longer of almost bottomless depths in the Ocean, of pressures so great that nothing, whether of wood or iron, could sink below their plane, of an utter absence of life on the Ocean bed, or of a uniform temperature of 39° F., which was believed to exist after reaching down to a certain point beneath the surface. All these ideas have been exploded by the invention of the needed appliances, and the results of Deep Sea work during the past twenty years.

Under old methods with ordinary sinkers and heavy hempen lines, it was found exceedingly difficult to tell when the lead reached bottom in depths beyond 1,200 fathoms, the friction and weight increasing to such a degree that the touch of the plummet could not be felt sensibly enough to make the fact sure, and the line would continue to run out indefinitely simply from its own weight.

For many years, distinguished officers in the principal Naval services, strove in vain to solve the problem. Spun-yarn, silken lines, fishing lines and wire were tried, but generally, with little or no success.

Captain Denham, of H. M. S. *Herald*, thought he found bottom, sounding in the South Atlantic, at a depth of 4,600 feet. Lieut. Parker of the U. S. S. *Congress*, sounding off the coast of Brazil, ran out 50,000 feet of line, reporting no bottom at that great depth, (some 9 miles). Lieut. Walsh, U. S. N. sounded with 34,000 feet of wire without feeling bottom, and Lieut. Berryman, in the U. S. brig *Dolphin*, ran out a line of 39,000 feet with no more definite results.

We know now that all those soundings were defective, and that hardly more than half or two-thirds of those depths exist anywhere in the Ocean. The deepest reliable sounding yet on record was recently made by H. M. S. *Challenger*, between St. Thomas and Bermuda, where a depth of 23,250 feet was found.

One trouble with the small lines was that they were not strong enough to bring the sinker back to the surface, but would generally break, from the strain imposed upon them at great depths; another trouble arose from the fact that the line was let run as fast as it would go out, and, in fact, was rather assisted than retarded, so that the shock of striking, communicated through the dense mass of water by the line, was not felt perceptibly enough to make the fact unquestionable, and, in short, the moment of touch was never known, but guessed at, more or less.

Again, it was almost impossible to keep a sailing vessel directly over the line, and the drift of the ship and action of currents upon the rope, gave very imperfect results, even at depths of no more than 1,000 fathoms, and where the indications were good, that bottom had been reached.

In surveying the immense coast line of the United States, the U. S. Coast Survey, then under the direction of Prof. Bache, undoubtedly initiated the first systematic endeavour to grapple with this important problem, and Lieut. Maury, of the National Observatory, seizing the opportunity proposed that strong twine, made expressly for the purpose, should be used with 32 lb. and 68 lb. shot for sinkers, and, instead of sounding from the ship, he suggested the work should be done from a boat, the idea being that the boat could be kept directly over the line by means of the oars, and the twine being so small and light in proportion to the weight of the sinker, the shock of striking might be felt as it ran through the hand,

the twine to be cut when bottom was reached, without trying to heave it back; thus a proportionately heavier sinker could be used than with the methods previously in vogue.

The U. S. brig *Dolphin*, under the command of Lieutenant, now Rear-Admiral, S. P. Lee, U.S.N., was the first to try that experiment, and after a number of failures which tested the patience and skill of that officer to the utmost, he finally succeeded, and the results obtained by that vessel were probably the most reliable which had been obtained up to that time. But this success lacked one important feature; specimens of the bottom were needed, not only to put beyond doubt the accuracy of the sounding, but to bring to the light of investigation the character of the soil from the ocean bed.

Then it was that, Lieutenant J. M. Brooke, U.S.N., invented the simple and beautiful contrivance of detaching the sinker and dropping it on the bottom, leaving a small rod, hollowed out at the bottom, in which were fixed open quills, to be hauled back on board by the twine. In the act of striking, the quills would fill with mud, and retain it till drawn up to the surface.

Lieutenant, now Rear-Admiral, B. F. Sands, U.S.N., also devised an apparatus by which a split sinker was made to fall apart when it touched bottom, leaving a cup, ingeniously arranged to bring up specimens of the bottom, but the Brooke apparatus seemed to find the most favour, and from that time forward, 1854, that apparatus, or modifications of it, or machines based upon the principle of getting rid of the sinker, have been used in all services making deep sea explorations. On this head Prof. Ansted, in his "Geological Gossip" says, "We have to thank our brethren from the other side of the Atlantic for a number of trials and experiments, with various modifications of the old sounding-line, and also for the introduction of a simple and efficacious contrivance for overcoming the difficulty. Brooke's sounding apparatus, slightly modified in matter of detail, is now generally employed, with the greatest success, to obtain proofs not only of the depth, but of the nature of the bottom of ocean." In the English service the "Bull-dog," the "Fitzgerald" and "Aydra" machines have been mostly used, the latter being the favourite, and which is now in use on board H. M. S. *Challenger*.

It was about this time too, that Mr. Massey, an English inventor, devised his sounding machine, which was a contrivance of cogwheels turned by the action of the water on a screw.

The machine was attached to the line above the lead, and in descending, the revolutions of the screw gave motion to the cogwheels, which registered the number of fathoms corresponding to the number of fathoms reached. This machine was a good step in advance, but owing to the enormous pressure of the water at great depths, which seemed to effect the perfect working of the wheels, the results were not so reliable as at first glance would appear.

These inventions happened just at the "nick of time," for the first Atlantic cable was then in contemplation, and the U. S. steamer *Active*, the first steamer used in making deep-sea soundings, was fitted out with every appliance, including a steam-reel, which experience suggested up to that time, and was placed under the command of Lieut. O. H. Berryman for the purpose of sounding out a route for the proposed cable. The line was run, both the Brooke and Massey apparatus being used, and many good specimens of bottom soil were brought up, but Lieutenant Maury, questioning the accuracy of some of the *Active's* work, the English Admiralty sent H. M. steamer *Cyclops*, Lieut. Dayman, to go over the same ground. Lieut. Dayman used Brooke's apparatus, slightly modified, and the soundings made by him substantially verified those made by Berryman.

In 1858, Brooke, in the U. S. brig *Dolphin* tested his own apparatus in sounding in various parts of the North Pacific, and in 1868, Captain Shortland, R.N., in H. M. S. *Hydra*, ran a line of soundings from Bombay to Aden for cable purposes. On board that vessel was devised the *Hydra* machine, in which a spring was substituted for the trigger in the Brooke apparatus, and the tube for specimens was fitted with a piston and a series of valves. This machine, as before mentioned, is the one now preferred in the English service, and in use on board the *Challenger*.

Captain Shortland kept a certain amount of tension on the line, and noted the time each hundred fathoms took in running out, then watching closely when the sinker was supposed to reach bottom,—the line was still permitted to run on, and if with diminished speed, it was considered that bottom had been reached: of course, if the specimen tube came up alone, leaving the sinker on the bottom, there could be little doubt of the value of the sounding. In 1870 and 1871, Commander Jno. Irwin, in the U.S.S. *Yantic* sounded among the West India Islands and in the Caribbean Sea. He used Massey's apparatus and undetached lead, with specimen cup invented by Rear Admiral Sands, and sometimes duplicated the soundings in order to verify results.

The very successful sounding and dredging expeditions of H. M. Ships *Lightning* and *Porcupine* in 1868, 1869 and 1870 under the scientific direction of Dr. Carpenter and Professor Wyville Thomson led the English Admiralty to fit out the *Challenger* for the cruise upon which she is now engaged. She has a large scientific corps on board with Professor Wyville Thomson at its head, and I believe may be expected to arrive in the waters of Japan sometime in 1875.

The *Tuscarora* was fitted out at the Navy Yard, Mare Island, Cal., in the summer of 1873, for the purpose of sounding between the shores of the U.S. and Japan, to ascertain the practicability of a cable route across the North Pacific. She was originally fitted with two machines, one a heavy dynamometer, devised by Passed Assistant Engineer T. W. Rae, U. S. Navy, for sounding with a rope or cord, and the other, a small reel and dynamometer, invented by Sir William Thomson, of Glasgow University, to be used with fine piano wire.

The heavy dynamometer worked well at depths of 1,800 fathoms, beyond which it was not tried, as, owing to the sudden complications with Spain it was taken out of the ship to make room for a gun. Had that machine been kept on board, it was further intended to use with it a small cord, or rope of wire, instead of the hempen line, and the results would undoubtedly have been good. When sounding with that machine, the line passed from the reel with two or three turns round a large drum twelve feet in circumference,—the revolutions being registered by a counter, so that the length of line out was indicated both by the counter and the marks on the line. The principle upon which the working of the machine was based, was essentially the same as that which constitutes the chief merit of the Thomson dynamometer; but this machine being out of the question for the cause above given, the Thomson machine had it all its own way, and so admirable has been its working, and so accurate are its indications that, it seems to be no more than due to the genius of Sir William to say, that the appliances for what may be not inaptly called the perfection of Deep Sea Sounding, originated with him. Wire had been tried by Lieut. Walsh on board the U. S. schooner *Tawey*, so far back as 1849, but the happy thought had not occurred to him to measure the weight of the wire as it ran out, and applying a counterbalancing weight inside to restrain it in its descent, hence, the specific gravity of the wire being so great, it would continue to run on forever, if permitted, without giving any indication of touching bottom; and so its use was abandoned.

The Thomson machine consists of a reel or drum six feet in circumference, made of galvanized sheet iron. The drum is about four inches in width and has a rim on each side from one and a half inches to two inches in height. Around the right side of the drum runs a V groove which takes the endless rope or pulling line which controls the revolutions of the drum in sounding.

The drum weighs about 60 lbs., and will readily hold five miles of the piano wire. It rests on a light iron frame bolted to a wooden bed and can be readily unshipped when not required for use. Close behind the rim of the drum, and directly in line with the V groove, is fixed a light iron wheel ten inches in diameter; this wheel, called the dynamometer wheel, has one groove wide enough to hold two parts of line, and a second narrow groove to receive a cord simply. Back of this wheel is a common spring balance, which will register a strain of 110 lbs.

Some twenty-five feet from the reel is fixed a pulley wheel, connected with the drum on one side, by the end-

less rope, and having a pendant on its other side running through a block suspended for the purpose. To the pendant are attached hooks from which to suspend weights of different sizes. The inventor used a tackle, instead of a pendant and weight, to be hauled taut as occasion required, but weights were substituted as being easier to manage and more satisfactory in their working, as by that means a steady, known and invariable strain could be had as desired, according as the weight of wire and sinker out, make increased power on the pulley necessary.

In getting the machine ready to sound, an endless rope of medium size is fitted into the grooves of the drum and pulley wheel, like an ordinary belt, then a full turn is taken round the dynamometer wheel, the latter being secured to the spring balance by a small cord resting in the narrow groove, and passing down through a small hole in the wheel, weights then being hooked to the pendant, the endless rope tautens, and the machine is ready for use.

When the machine is in operation, the pulley line, or endless rope, runs freely round with the drum and pulley wheel, but the dynamometer wheel being held fast by the small cord attached to the spring balance, the friction of the turns of the rope running round the wheel expends itself in bringing a strain on the balance, the index of which registers the number of pounds of that strain; it is needless to say the strain is in proportion to the amount of weight on the pendant.

The piano wire No. 22 in size, weighs, in water, about 12 lbs. to the statute mile, and will bear as strain of from 200 lbs. to 230 lbs. The wire comes in lengths of from 200 fathoms to about 400 fathoms, and has to be spliced to make it available for sounding purposes. The splices are made some three feet in length, the parts being put together with a long jawed twist, and the ends and three or four intermediate points secured with solder. The whole length of the splice is then served with fine waxed thread and the splice is complete. In no case have the splices drawn or broken. To keep the wire free from rust, it is kept at all times when not in immediate use, in a tank containing a solution of caustic soda. This protects the wire completely, and the piece before the Society this evening has been in use ten months.

To the outer end of the wire is attached a light galvanized iron ring, or rope grummet, to which is made fast some 25 fathoms of cord or Albacore line; to the other end of this line is attached the apparatus for the detachable sinker and specimen cup. The purpose of this line is to prevent the wire from coming into contact with the bottom, for if that were allowed, the wire being stiff and elastic, would be apt to fly upward, *kink*, and *break*.

The sinkers used are 8-inch shot with holes bored through their centres $2\frac{1}{2}$ inches, and $2\frac{3}{4}$ inches in diameter, through which the Brooke detaching rod and the specimen cylinders are passed; their weight is 55 lbs. and 51 lbs. Sir William Thomson used a lead sinker weighing 30 lbs. which he hauled back with the wire, but that plan put too much stress on the machine in reeling in, and the heavier sinker to be detached by Brooke's apparatus was adopted on board the *Tuscarora*. Sir William has now abandoned the hauling back of the sinker, I believe.

The cups or cylinders, of the different designs, used on board the *Tuscarora* with the Brooke apparatus, were devised on board, and work so well that mud enough to fill a five ounce vial is sometimes brought up.

The soundings are taken from the gangway, as being nearer the centre of motion than any other convenient part of the ship, and therefore less subjected to the pitching and rolling motion of the vessel.

When it is required to sound, supposing the ship to be under sail, the fires, which have been banked, are spread, and when steam is ready, say in half an hour, the usual time, all sails are furled, and kept in that position by the backing of the engines. In calm or light weather, the use of the engines is only required at intervals, at other times, when the wind is fresh and the sea heavy, they are kept backing all the time, and sometimes at full speed.

Meanwhile the machine has been got ready, and when the ship has lost headway and become steady, so that the wire can run straight down, the sinker is carefully lowered into the water by hand. Then the self-registering thermometer for ascertaining the bottom temperature is at-

tached to the cod-line, and the line is allowed to run out gently until the wire is reached, when the latter is clamped to prevent further egress until a leaden weight of some four pounds can be attached to the ring. This precaution is necessary to prevent the wire flying upwards when the sinker strikes bottom, and relieves the wire of its tension, otherwise, it would be apt to take in kinks and break, as in the other case mentioned.

Now a man has been attending at the pendant with the weights during this time, and, being all ready, the officer in charge has the wire unclamped and lets it run slowly at first; then, when well started, directs some of the weights to be taken off to allow the wire to run more freely, but it is never allowed to run out faster than at the rate of 100 fathoms in 50 seconds, and seldom, at less rate than a minute.

For instance, at the beginning of the cast, the weights on the pendant generally aggregate 90 lbs.—the indication shown by the dynamometer being 37 lbs., and when the wire is going out with the greatest speed admissible the pendant weight is 25 lbs. and the indication shown by the dynamometer 15 lbs.

On the left side of the drum is attached a counter which registers the number of revolutions, and an officer stands with watch and book in hand to note the time of each 100 fathoms running out. The wire has previously been carefully measured as it was wound on the drum, the number of fathoms in each splice being registered in the book; thus when bottom is reached, the depth is known with great accuracy, especially as there is no appreciable stretch to the wire, as there is to rope or cord.

Now when it is supposed the sinker is nearing the bottom, the speed of egress is diminished by replacing the weight up to 90 lbs. or 100 lbs., the dynamometer showing from 35 lbs. to 40 lbs.

The moment the sinker strikes bottom it becomes detached, and the strain which has retarded the descent of the sinker, is now only resisted by the weight of the wire, and pulls back with a force equal to the weight of the shot now resting on the bottom. This causes the index hand of the dynamometer to fly up, and the drum to stop revolving instantly. So perfect and unmistakable are the indications at whatever depth, that, a person standing in any part of the ship and looking at the machine, can tell the moment bottom is reached. In reeling in, the dynamometer wheel is unshipped, and the pulley line is shifted for a larger one. The inventor's plan was to reel in by men hauling in on the pulley line, hand over hand, but after a while a heavy balance wheel was fitted for reeling in on board the *Tuscarora*, enabling four men to do the work with more ease, facility and quickness, than six men could do it under the old method.

As compared with rope, the time of the running out of the wire is about the same, the great gain being, in reeling in. For instance, Prof. Wyville Thomson states, in his "Depths of the Sea," that sounding from A. M. S. "Porcupine," in 2435 fathoms, the deepest cast made from that vessel, the time occupied in descent of the line was 33 minutes, 35 seconds, and in "heaving up" 2 hours, 2 minutes; while on board the *Tuscarora* a cast was had in 2565 fathoms, the time of running out being 31 minutes, 7 seconds, and of reeling in 39 minutes, 42 seconds, or a gain of nearly a hundred per cent in the total time occupied in the cast. And, I can but consider the difference in accuracy in favor of the wire, to be somewhat in the same proportion, for a sinker attached to that light, thin attenuated material, goes straight to the bottom like a plummet dropping into a well, opposing an almost inappreciable surface to the action of ocean currents, while rope or cord, comparatively heavy, presents a not inconsiderable and rough surface, developing a good deal of friction as it runs down to great depths, and curves and ends in all directions in meeting the under currents, and the percentage of stretch should by no means be lost sight of.

When sounding, serial temperatures are taken at the same time, from the topgallant forecastle, with a duplicate Thomson machine. For instance if the temperature is desired for every 100 fathoms below the surface down to 500 fathoms, a 7 lb. lead and a Miller-Casella thermometer is attached to the wire. Then the wire is allowed to run out slowly till the 100 fathom mark is reached and

another thermometer is attached, and so on, till the desired depth is reached, and thus, at one serial sounding, the several temperatures are taken. The thermometers are very accurate in their indications, as found by their close correspondence in the many series of temperatures observed.

In the Central North Pacific, from San Diego to the Bonin Islands, the under temperature curve of 40° F. is found to range from 400 fathoms to 500 fathoms in depth. At 1200 fathoms about the lowest temperature is reached; from that depth downward, the thermometer shows a uniform temperature of from 33° to 34° F., and the copper cases enclosing the thermometers come up from the bottom feeling very cold.

In September 1873, the *Tuscarora* sounded 1100 miles on a great circle from Cape Flattery, Washington Territory, towards Atcha, one of the Aleutian Islands. The work was then suspended owing to the lateness of the season. About 200 miles from Cape Flattery, a submarine elevation of 1800 feet was found, which is probably an under spur from Vancouver Island. From that point to the locality where the ship stopped work, the bottom descends in a remarkably regular manner, averaging a fall of about six feet per mile. Indeed, that part of the Pacific bed may be likened to a section of an immense shallow bowl, so gentle and regular is the curve of descent.

The character of the bottom varied considerably, mud, stiff clay, ooze, sand, pebbles and shingle being brought up at different points on the line sounded; in that respect differing materially from the character of the soil on the telegraphic plateau of the North Atlantic, which is almost precisely uniform in its nature throughout its whole extent.

On the way back to San Francisco, and from San Francisco to San Diego, soundings were made off and on the coast to determine the "True continental outline, or the beginning of the ocean bed proper." The result shown was, that a slope or terrace, from 10 miles to 50 miles in width, makes off from the coast line in comparatively shoal water, and then drops very abruptly down to depths of 1,500 fathoms and 2,000 fathoms, constituting an immense buttress, as it were, to support the continent.

While sounding late one afternoon, some 140 miles off the coast of California, the lead suddenly brought up at a depth of 996 fathoms, where a depth of 1,600 fathoms or 1,700 fathoms was looked for. No specimen came up and the point of the cup was found to be battered.

Sounding round the locality it was found that a rocky submarine peak, 4,000 feet in height, existed in that part of the ocean, rising very abruptly from the ocean bed on northern, eastern and western sides, with a gentle slope on its southern face.

The ocean bed between San Diego and the Hawaiian Islands is like the Atlantic plateau, gently undulating, but differs in this respect, that it is boldly abrupt near the respective coasts; the character of the bottom soil—a light yellowish brown mud or ooze,—is nearly uniform.

Not so the bed from the Hawaiian Islands westward, which is irregular and mountainous, and the nature of the bottom soil dissimilar,—coral limestone, lumps of lava, coarse sand and ooze, containing particles of lava, coming up in specimen cylinders at various localities on the route sounded. Six (6) submarine elevations, ranging from 7,000 feet to near 13,000 feet in height were found, and the evidence seems indisputable that the entire region west of the Hawaiian group has been subjected, at some remote period, to volcanic disturbances. Professor Dana, the great authority on corals, states, the range of living corals to be no more than 120 feet in depth. Where then, did the disintegrated coral, brought up from the mountain peaks 11,000 feet below the surface come from? The answer would seem to point to the former elevation of these peaks, and their gradual subsidence during the long epochs of geological action.

The theory has been that the greatest depth in the Pacific would be found in its eastern part, but so far as the question relates to the North Pacific, the line of soundings run by the *Tuscarora* would seem to prove to the contrary, the deepest water having been found near the Bonin Islands.

The deepest water found between San Diego and Japan via the Bonin Islands was 3,287 fathoms, (19,722 feet), or, about three and three quarters statute miles, and as the weight of a column of water one inch square, is about a ton for every 800 fathoms, it follows that the pressure at that enormous depth amounts to four (4) tons per square inch. The total time occupied in sounding to that great depth and bringing back a bottom specimen, was 1 hour, 56 minutes, 32 seconds. The quickest time was made, when sounding at a depth of 3009 fathoms, which occupied 1 hour, 29 minutes, 32 seconds only.

The soundings are made at night as well as by day, and the incomparable working of the Thomson machine is a source of never ending wonder and admiration to all who witness it.

Nor is it a small gratification to receive back the specimen cups and thermometers which have travelled down so far, and snatched answers from those dark mysterious abysses which the heart of man has ever been questioning, with but faintest replies.

This paper has been hastily prepared, and is with diffidence, respectfully submitted to the Asiatic Society of Japan.

GEO. E. BELKNAP,
Commander, U. S. Navy.

JOURNAL OF DEEP SEA SOUNDINGS.

NORTH PACIFIC OCEAN, BY U. S. S. *Tuscarora*.

Comdr. Geo. E. BELKNAP Comdg.

SAN DIEGO, CAL. TO YOKOHAMA, JAPAN, via HONOLULU AND BONIN ISLANDS.

April 6th, 1874.

Cast No. 39.

Number	39	Latitude 23° 31' N. Obs.
Hour	5h. 37m. 32s. A.M.	Longitude 161° 51' E. Chro.
Wind	S. W. by S.	Barometer 30.09 Ther. std. 76°.
Force	4.....	Temperatures air, D.B. 74° 3, W.B. 74°.
Weather	be. Clouds ci.-cu. Prop. clear 8	Sea Surface 76°.
Sea	Moderate with long swell from S. and W. Under ..	bottom 34° 6—104—33° 2. (18136.)
Line	Piano wire No. 22	Depth. 3009 fms.
Sinker	8 in. shot.	Bottom. Yellow brown mud.
Weight	55 lbs.	Surface Current, Not tried.
Machine	Sir Wm. Thomson's.....	Under " " "
App. for Spec. Belknap cylinder No. 2.....		Value of Sounding. Undoubtedly good.

CURRENT SHOWN BY OBSERVATIONS 1. 3 FATHOMS PER HOUR N. 70° W.

Fathoms or Revolutions.	Time.			A.M. OF P.M.	Interval.		2d. Diff.		Time hauling in.			Remarks.
	Hour.	Min.	Sec.		Min.	Sec.	Min.	Sec.	Hour.	Min.	Sec.	
	5	37	32	A.M.	Furled foresail and fore and aft sail brought ship stem to wind and sea, engines backing most of the time, ship easy, took temperatures forward; waited five minutes for temperature. At end of cast made all sail and banked fires, fine breeze from S. and W.
100	"	38	44	"	1	12	...	...	...	1	39
200	"	39	47	"	1	03	...	9	...	1	11	
300	"	40	51	"	1	04	...	1	...	1	09	
400	"	41	56	"	1	05	...	1	...	1	07	
500	"	43	03	"	1	07	...	2	...	1	10	
600	"	44	12	"	1	09	...	2	...	1	15	
700	"	45	22	"	1	10	...	1	...	1	26	
800	"	46	34	"	1	12	...	2	...	1	37	
900	"	47	47	"	1	13	...	1	...	1	30	
1000	"	49	01	"	1	14	...	1	...	1	31	
1100	"	50	16	"	1	15	...	1	...	1	20	
1200	"	51	32	"	1	15	...	1	...	1	24	
1300	"	52	52	"	1	20	...	4	...	1	20	
1400	"	54	11	"	1	19	...	1	...	1	42	
1500	"	55	32	"	1	21	...	2	...	1	43	
1600	"	56	53	"	1	21	...	...	...	1	45
1700	"	58	18	"	1	25	...	4	...	1	49	
1800	"	59	40	"	1	22	...	3	...	1	44	
1900	6	01	00	"	1	20	...	2	...	1	38	
2000	"	2	24	"	1	24	...	4	...	1	33	
2100	"	3	51	"	1	27	...	3	...	1	26	
2200	"	5	26	"	1	35	...	8	...	1	37	
2300	"	6	59	"	1	33	...	2	...	1	55	
2400	"	8	35	"	1	36	...	3	...	1	59	
2500	"	10	10	"	1	35	...	1	...	1	56	
2600	"	11	47	"	1	37	...	2	...	2	05	
2700	"	13	25	"	1	38	...	1	...	2	01	
2800	"	15	05	"	1	40	...	2	...	2	04	
2900	"	16	52	"	1	47	...	7	...	1	58	
Time going out..... 39 20 Coming in..... 46 33												No. of Revolutions 2910. " " measured fathoms 2984 Stray line 25 Depth..... 3009
Finished..... 7 07 04												
Total time of cast..... 1 29 32												

ASIATIC SOCIETY OF JAPAN.

A Regular Meeting of the Society was held on the 13th of May 1874, at the Grand Hotel; Dr. Hepburn, the President, in the Chair.

Owing to the absence of the Recording Secretary the Minutes of the last Meeting were not read.

Printed copies of the Amended Constitution and By-Laws were laid on the table for the use of the members. Some Fossils were presented by Judge Goodwin, and a Crinoid from Inoshima by Rev. Mr. Cooper. Also a copy of Vol. I. of Botanical Researches in Japan by Dr. Sabatier of Yokoska.

The names of the following gentlemen, as new members, were announced:—Messrs. C. W. Goodwin, C. W. Kinder, Herbert Cope, John J. Quin, F. Ringer, J. C. Smith, T. B. Glover, Alex. Wright, D. D. Inglis, J. J. Van der Pot, F. Heelyer, and Rev. H. Burnside.

A Committee was appointed to confer with the Literary Society on the subject of a new Hall to be occupied by the two Societies conjointly.

In the absence of the writer, C. W. Lawrence, Esq. of H. B. M. Legation, a paper "Notes of a Journey in Hatachi, Shimôsa and Kadzusa" was read by Mr. Satow; who afterwards explained in answer to an enquiry, that the removal of Buddhist Shrines and Temples about which so much had been said recently, was to be understood—not as an endeavour to extirpate Buddhism, but only as a clearing away from Shintô grounds and temples of what had been intruded there during the Shôgunate.

The Corresponding Secretary then read a paper by Captain Belknap, of the S. S. *Tuscarora* on Deep Sea Soundings, which was followed by explanations by Captain Belknap him-

self of the apparatus employed in the soundings; and also of a Diagram exhibiting an outline of the ocean bed from San Diego, in California, to the Sandwich Islands; thence to the Bonin Islands, and thence to Japan. The future line of soundings is to run along by the Aleutian Islands to Alaska.

The President tendered the thanks of the Society—afterwards confirmed by a special vote—and remarked on the exceptional value and interest of papers such as that just read.

PROF. W. E. AYRTON said:—

Captain Belknap has ably described in his paper the history of deep sea sounding apparatus. As he has said, the methods by which attempts have been made to obtain accurate results may be divided into four classes—the use of a very heavy weight to keep the line approximately vertical, which weight had to be left at the bottom at every sounding so that the mere cost of metal thrown away was, in a long expedition like the present, considerable—next, an apparatus like a *patent-log* which recorded on a tell-tale arrangement attached to it, its descent in the sea—thirdly, sounding by time, in which case there was attached to the weight only a very light line the object of which was merely to determine when the weight reached the bottom, it having been proved that a body falling unimpeded through water moves through equal spaces in equal times, quite unlike the case of a falling body in air, where if the time is doubled the space is quadrupled; with this latter method of sounding, however, not only the weight but the cord was also lost. All the above methods have proved more or less unsatisfactory in deep seas where there are surface or under-currents. After the paper we have heard from Captain Belknap, bearing valuable testimony as it does to the efficiency of Sir William Thomson's piano-forte wire arrangement, it is with dif-

fidence that I am now going to say a few words regarding that system. Perhaps the fact of my having been present on the occasion when Sir William first brought his method before the notice of public, at the Meeting of the British Association held at Brighton in 1872, now enables me to say something about the line of thought which gave birth to this invention and may plead as an excuse for my apparently trenching on a subject Captain Belknap has made so thoroughly his own. Owing to that little hesitation naturally displayed by Mr. Syle regarding the infliction on the company of the valuable technical details contained in the paper we have just heard him read, I am afraid that the points of merit of the Thompson apparatus may not have been made clear to some of those present. It was quite evident to Sir William that in order to have accurate deep sea soundings fine wire and not cord must be used; the first point, therefore, was to devise a contrivance by which the paying out wheel should be automatically stopped the moment the weight reached the bottom. This he has succeeded in doing in a very ingenious way. To the end of the wire a small weight is attached; to this, one end of twenty-five fathoms of rope, to the other end of which hangs a much larger weight with a cup for bringing up specimens from the bottom. The existence of the two weights and the very important part played by them was *not*, I think, grasped by many during the reading of the paper. This wire is wound on a drum, made as little massive as possible. The motion of the drum is regulated by an exceedingly simple friction break, which is so adjusted that when the lower and heavier weight has nearly reached the bottom the retarding force is a little less than the total strain on the wire, but much greater than that strain becomes when the lower weight rests on the bottom, consequently the moment the bed of the ocean is reached the paying out gear automatically stops,—the wire hangs practically vertical without slack, and the total amount run out indicates the true depth. After arranging this apparatus one of the early difficulties experienced by Sir William was to obtain thin wire of sufficient strength. This he at last succeeded in doing by the employment of piano-forte wire. But as the thin piano-forte wire is not that which is commonly used for sounding the deep C, considerable judgment had to be employed in the selection of wire of only the best quality. Another difficulty experienced was that it was necessary to make the drum on which the wire was wound very slight, for unless its mass is kept small the momentum the wheel would acquire by its rapid rotation would be such as to prevent it being suddenly stopped by the friction break when the weight reached the bottom. On the first trial of this apparatus when Sir William was making soundings in the Bay of Biscay the accumulated strain of the wire, produced on coiling in, completely crushed the slight drum on which it was wound, so that it became necessary for those engaged to seize the wire with their hands to pull it up. However, although the depth of the sea there is over twelve hundred fathoms, and although there were only two or three men in the small boat from which the soundings were being made, Sir William succeeded, by aid of that indomitable energy and perseverance that has characterised all his undertakings, in bringing up specimens of the bottom which he exhibited at that meeting of the British Association. Perhaps Captain Belknap will kindly give as the results of his experience with reference to the crushing of the drum, also whether he knows why the *Challenger* has made, as far as I know, no use of the wire apparatus that was supplied them.

Captain Belknap, in reply to various inquiries, stated that they had been quite successful in bringing up specimens of the bottom; that corals were found at a depth hitherto unthought-of; that evidences of life were found at the greatest depths; and that he had found it necessary once and again to strengthen the drum employed in the method of Sir Wm. Thompson, with whose views he was well acquainted, and who sympathized cordially with the work now being performed by the *Tuscarora*.

THE REGATTA.

The unusual calmness of Saturday, however appreciable by spectators, deprived the sailing matches of much of their spirit and this portion of the carefully arranged programme of the Regatta Committee proved dull and uninteresting. Some of the pulling races were, however, proportionately the more exciting, and though much may be said upon the little interest felt by the community in Boat Races, it must be admitted that the competitors did not appear to feel the want of the stimulus and that their pulling exhibited the effects of the training they had submitted to.

The P. & O. steamer *Behar* was the flag-ship on this occasion. The band of H. M. S. *Iron Duke* was present and performed an admirable selection of music.

SAILING RACES.

1.—YACHTS 35 FEET AND OVER

Messrs. Whitfield & Dowson's *Zephyr*... 1
Mr. Cook's *Undine*..... 2
Mr. Ewalt's *White Cloud* 0

All three started at 9 a.m. The *Zephyr* had the leeward station, but rounded the Lightship first and kept the lead throughout. At Saratoga Spit the yachts were all becalmed and well together; a light breeze springing, the *Zephyr* drew away rounding the Kawasaki point stake first and won, at 9 p.m. The *Undine* came in during the night. The *White Cloud* gave up the contest and returned to harbour at 6.30 p.m.

2.—YACHTS OVER 20 AND UNDER 35 FEET.

Dr. Dalliston's *Tantivy* 1
Mr. Pagden's *Flirt*..... 2

The *Pet* having no one to sail her did not start; the others got away at 9.20 a.m., the *Tantivy* with a decided advantage being to windward won the race at 3.12 p.m. *Flirt* was second a long way astern.

3.—YACHTS UNDER 20 FEET.

The *Flirt* being transferred to race No. 2 in consequence of being 20 feet and *Sea Lark* not going, this was no race.

4.—OPEN BOATS.

Mr. C. J. V. Ruschenburger's *Abunai*... 1
H. M. S. "Iron Duke's" *Moosemi* 2
U. S. S. "Hartford's" *Daring*..... 3

Ten boats entered but only six started, *Moosemi*, *Abunai*, *Daring*, *Foolish Virgin* and *Shoey-leen*. *Shoey-leen* came in first, *Abunai* 2nd, *Moosemi* 3rd, *Daring* 4th. *Shoey-leen* was disqualified for paddling in a calm and the prizes were given as follows:—1st *Abunai*; 2nd *Moosemi*; 3rd *Daring*.

5.—CANOES.

Lieut. Smythe's *Kamo* 1
Mr. J. J. Dare's *Jiggy-Jiggy Maru* ... 2
Won by Lieut. Smyth's *Kamo*; Mr. Dare's *Jiggy-Jiggy-Mar* 2nd.

PULLING RACES.

1.—PAIR-OARED OUT-RIGGERS.

Mr. J. J. Dare { Mr. J. J. Dare..... } 1
 { Mr. P. G. Whittall... }
 { Capt. Walsh (cox.) }
Mr. J. Dodds { Mr. C. J. Melhuish... } 2
 { Mr. Dodds }
 { C. P. Hall (cox.)... }

Mr. Dare's boat being the lightest got away with a lead from the first and kept it throughout, winning easily.

2.—MEN-OR-WAR'S CUTTERS.

U. S. S. Kearsage *Cutter* 1
U. S. S. Hartford *Forget-me-not* 2
The *Saco* having gone to sea only two started. Won by the *Kearsage's* cutter.

3.—MERCHANT SHIPS' BOATS.

Capt. Andrews' *The Bishop* 1
The *Southern Cross* not having put in an appearance, it was a walk-over for *The Bishop*; the prize was not awarded.

4.—FOUR-OARED OUT-RIGGERS.

Mr. J. J. Dare	1. E. F. Kilby.	3. A. Milsom	1
	2. E. B. Jones.	4. J. J. Dare.	
Mr. Hamilton	1. P. Whittall.	3. H. J. H. Tripp	2
	2. J. T. Henderson.	4. G. Hamilton	
Mr. Dodds ...	1. C. P. Hall.	3. J. Dodds.	3
	2. F. G. Davidson.	4. H. O. Jeyes.	
		Capt. Walsh (Cox)	

The three boats got away together, Messrs. Dodds' and Dare's boats going off with the lead. Mr. Hamilton's boat, pulling a long steady stroke, soon passed Mr. Dodds' boat. At the Pacific Mail Wharf Mr. Dare's boat lead by more than half a length. Shortly after, Mr. Hamilton's crew, responding to a call, put on a spurt, and rapidly overhauled the leading boat which, however, won by about half a length.

5.—SHORE GIGS AND WHALE BOATS.

Mr. Henry Reuter *Yankee Doodle*..... 1

Mr. H. B. Henley *The D'l*..... 2

Yankee Doodle and *The D'l* only started: the former had it all her own way throughout and won very easily by several lengths.

6.—MEN-OF-WAR'S GIGS.

U. S. S. "Lackawanna" *True Blue*..... 1

U. S. S. "Kearsage's" *Gig* 2

"Bourayne's" *Bourayne* 3

The *Arrow* and *Lackawanna's* gig No. 2 did not start. Won by *True Blue*; *Kearsage's* gig 2nd, and *Bourayne* a good race for second place.

7.—LADIES' PURSE.

Mr. A. H. Dare's *Koyoji* 1

Mr. C. P. Hall's *Snave* 2

Lieut. Smythe's *Zig Zag* 3

Mr. J. J. Dare's *Tooth Pick*..... 4

All four started. Mr. J. Dare and Lieut. Smythe, in Oxford tubs, had never any chance against the other two boats and the former soon retired. This race between *Koyoji* and *Snave* which were neck and neck throughout, sometimes one having the advantage, and then the other, was the prettiest race of the day. A short distance from the winning-post the *Snave* had the best of it, but Mr. A. Dare putting on a plucky spurt won by half a length. The purse was presented to the winner in a pretty little speech by Miss Amy Cargill who congratulated him on his success, and Mr. Dare in response expressed his thanks.

8.—MILITARY RACE.

This was no race.

9.—ALL SHORE BOATS.

Mr. Brown's *Eureka* 1

Mr. Henley's *The D'l* 2

Yankee Doodle was disqualified as the winner of the fifth race. Two started; *The D'l* and *Eureka*, the former came in first, but having gone round the wrong stake boat the prize was awarded to the *Eureka*.

10.—FOUR-OARED OUT-RIGGERS.

Mr. Hamilton	1, P. Whittall	3, A. Dare	1
	2, J. T. Henderson	4, G. Hamilton	
Mr. Leckie ...		J. Rickett (Cox.)	2
	1, C. J. Melhuish	3, G. Estienne	
M. Dodds ...	2, H. F. Abell	4, J. Leckie	3
		C. G. Dunlop (Cox.)	
	1, C. P. Hall	3, J. Dodds	
	2, F. G. Davidson	4, H. O. Jeyes	
		Capt. Walsh (Cox.)	

Mr. Dare's crew having won No. 4 race was excluded. The start for the other three boats was made at about 5 p.m., Messrs. Dodd's and Leckie's boats went off with a dash, followed by Mr. Hamilton who made no "start;" but the latter pulling a long steady stroke of 28 to the minute, which he maintained throughout, passed Mr. Dodd's at the first quarter of a mile, and at the half mile, took the lead, gradually increasing his distance without

altering his stroke, and won easily putting on a spurt of half a dozen strokes at the finish.

11.—BOATS OF ALL DESCRIPTIONS.

Mr. R. Robertson *Cambria* 1

U. S. S. "Hartford" *Forget-me-not*..... 2

Won by the *Cambria* (Japanese crew) easily. Five started.

12.—CANOE RACE.

This event did not come off.

ROYAL MARINE LIGHT INFANTRY SPORTS.

The sports organised by the Officers and men of this Corps for the amusement of the latter were held at the Camp on Tuesday afternoon. The weather was on the whole favourable, and the competition for the various prizes vigorous and well-marked, affording as much amusement to the "non-combatants" of the Corps as to the visitors who were present. The following are the games and the winner's names.

COMPANY RACES, 100 YARDS.

1st Co.

Sergt. Carpenter..... 1

" Gardner 2

2nd Co.

Private Hill..... 1

" Coombes 2

" Burnett 2

3rd Co.

Private Keane 1

" Tarring 2

Five started.

4th Co.

Corporal Broome 1

Private Barrett 2

Three started.

THROWING THE HAMMER, 18 lbs.

Sergt. Gardner (69 feet 4 in.) 1

Private Redding 2

" Shaw 3

THREE-LEGGED RACE.—100 yards round a post.

Keane and Nellor..... 1

Lannahan and Sage..... 2

Collins and Coombes 3

N. C. OFFICERS' HANDICAP.— $\frac{1}{4}$ of a mile.

Sergt. Carpenter (20 yards) 1

" Gardner (scratch) 2

Corporal Broome (7 yards) 3

PUTTING THE SHOT, 32 lbs.

Lance-Corporal Butt ...26 feet 9 inch... 1

Private Redding 2

Sergt. Gardner 3

CHAMPION 100 YARD RACE.—Two first in Company Race to compete.

Private Keane..... 1

Sergt. Gardner 2

Private Tarring 3

LONG JUMP, RUNNING.

Private Burnett, (17 feet) 1

" Gwillam 2

" Sage 3

MARCHING ORDER RACE. 1 Mile, walking or running.

Private Mitchell, (8 minutes) 1

Sergeant Carpenter..... 2

Private Clarke..... 3

FLAT RACE.—Open to N. C. Officers and men of the French Garrison.

Thorel 1

Jacques..... 2

Chaussebourg 3

Fourteen started.

PRIZE FOR THE BEST KIT.—Presented by Captain Walsh. Three men competed, and were judged equal.

MILE RACE.

Private Coombes.....	1
" Collins	2
" Morgan	3

Nine started.

FRENCH AND ENGLISH.—18 men per Company.

Private Culley's side	1
Lance-Corporal Butt's side.....	2

HURDLE RACE.—120 yards. 8 flights.

Private Keane.....	1
Sergt. Gardner	2
Private Clarke.....	3

FLAT RACE.— $\frac{1}{2}$ mile.

Tucker	1
Butcher	2
Waghorn	3

OLD SOLDIERS' RACE.—200 yards.

Private Mitchell	1
Sergeant Potts.....	2
Lance-Corporal Butt	3

 $\frac{1}{4}$ MILE HANDICAP.

Sergeant Carpenter.....	1
Private Clarke.....	2
Private Kean	3

Eleven started.

POLE JUMPING.

Private Clarke.....	1
---------------------	---

Height, 6 ft. 11 in.

 $\frac{1}{2}$ MILE RACE.—Open to Garrison and Squadron.

Private Hill.....	1
Private Coombes	2
Corporal Broome.....	3

SACK RACE.—100 yards, round a post.

Private Price	1
" Shaw	2
" Lannahan	3

Eight started.

STEEPLE CHASE.—Round the Camp.

Private Clarke.....	1
Sergt. Gardner	2
Private Price	3

Eight started.

CONSOLATION RACE.—For non-winners. Once round.

Private Barrett	1
Scott, A. B.	2
Private Smith	3

On the conclusion of the sports the prizes were presented to the winners by Mrs. Richards.

Law Report.

H. B. M.'s CONSULAR COURT.

Before RUSSELL ROBERTSON, Esq., Consul.

May 25th, 1874.

Edward Greensword, charged with drunkenness and other offences was sentenced to one week's imprisonment.

U. S. CONSULAR COURT.

Murchison, of the U. S. ship *Kearsage*, was charged with drunkenness and assaults on the police. He admitted the former but denied the latter offence.

A Japanese Constable deposed that he had discovered the accused asleep. He roused him whereupon the accused struck him.

The accused, who pleaded that he was habitually sober, was sent to his ship.

Miller, U. S. ship *Kearsage*, charged with drunkenness, was dismissed to his ship with caution.

Owens, of the U. S. ship *Tuscarora*, was condemned to imprisonment until his ship left the port for having quitted it without obtaining leave.

Extracts.

DIPLOMATIC CORRESPONDENCE.

Mr. De Long to Mr. Fish.

No. 302]

UNITED STATES LEGATION, JAPAN,

November 6, 1872. (Received December 7.)

SIR: Upon learning, some time since, from the minister of foreign affairs for this empire, that the kingdom of Lew Chew had at last been formally incorporated into this empire, and the King reduced to the condition of an ex-daimio and assigned a residence at Yedo, which he had accepted, I felt called upon to call the attention of this government to the compact between our Government and that of Lew Chew, proclaimed by the President March 9, 1855, and to inquire if that would be respected and observed by this government, as it, in its provisions, gave to our people certain privileges not embodied in our treaty with Japan. Accordingly, I addressed a note to this government making such inquiry. (inclosure No. 1.) to which on yesterday, I received an answer, (inclosure No. 2.) by which these authorities agree to regard the same.

Having learned that recently a junk's crew of Lew Chew people, who had been wrecked on Formosa, had been slain by the natives of that island, I inquired verbally of his excellency to know if such report was true; and if so, what, if anything, this government intended to do about it. I was informed, in reply, that it was true, and an intimation was thrown out that steps would soon be taken by the Japanese government to punish those people. The minister then inquired of me very particularly about Formosa; the character, purposes, and result of the expedition against those people led by our late Admiral Bell, and expressed the wish that I would obtain for him from our naval officers any copies of maps or charts possible.

All this seemed to indicate an intention to fit out an armed expedition.

At this juncture, which was about two weeks ago, General L. P. Le Gendre, United States consul at Amoy, arrived here en route to Washington, having a very full and complete set of maps, charts, photographs, &c, of the coast, main-land, and people of Formosa.

From him I learned that he had, on several occasions, visited the people who committed the atrocities, and established such relations with them as had enabled him to obtain guarantees against such atrocities being committed in the future upon Americans; that these people had observed their promises, and in two subsequent cases cared for and protected the crews of two English ships which were wrecked there; that diplomatic negotiations of some nature were now pending between our Government and China relative to this island, and that, in his opinion, it was feasible to undertake to obtain by peaceable means the same nature of guarantees for the Japanese.

Upon learning this, I thought I observed an opportunity, with the assistance the general could and seemed willing to lend me, to furnish this government with a mass of information most useful to it, thereby saving it from making any ill-advised efforts, and at the same time to put our legation at Peking and yourself in such rapport with the views and intentions of this government as to be of substantial benefit to us and at the same time advance my standing and intimacy with this government.

Actuated by these views, I requested General Le Gendre to remain over here for one steamer and assist me with this government by imparting to it such information relative to his observations of Formosa and its inhabitants as in his opinion and my own might, without impropriety, be given.

The general kindly consented to do so, and an interview between us and the minister of foreign affairs followed.

The minister expressed himself as surprised and delighted at thus being brought in contact with one so well informed on a subject so very interesting to them, and yet about which they could learn so little. The minister at once extended accommodations for the general in Yedo; invited my participation in all deliberations with Mr. Smith, the general, and himself, and has twice visited me and conferred upon the subject, being with me last evening until nearly midnight. The plan of action has not yet been resolved upon, but the minister assures me that his action shall be as open as the day to me, and that he will frame it to coincide with the wishes of our legation at Peking and of yourself.

I will at once advise Mr. Low of these proceedings by sending him a copy of this dispatch and writing him fully as often as anything develops of interest.

General Le Gendre will be compelled to remain over here at least one steamer more; that is, two weeks.

My obligations to him are very great. By his intelligence and

courtesy, he has enabled me to serve this government in a substantial manner, which will, I am sure, materially strengthen my influence with them, and, as a consequence, promote our Government's interests. I think, also, that before this matter is concluded we shall be able to arm Mr. Low with power and information calculated to enable him to effect good results and improve his influence with the Chinese government. I hope in all of this that I have acted as you would have wished me to; if not, however, and you should disapprove of what has been done, I beg you to let the whole blame rest on me, as General Le Gendre has, in all matters, acted simply by my request, although I am satisfied that such action has also been in accordance with his own views and wishes.

I have, &c.,

C. E. DE LONG.

Mr. Fish to Mr. De Long.

No. 187.]

DEPARTMENT OF STATE,

Washington December 18, 1873.

SIR: I am in receipt of your No. 303, dated 6th day of November.

You state that the kingdom of Lew Chew has become formally incorporated into the Japanese Empire, the King reduced to the condition of an ex-daimio, and assigned a residence in Yedo, which he has accepted; that you had called the attention of the Japanese government to the compact of July 1854, between the United States and Lew Chew, and had inquired if that compact would be respected and observed by the Japanese government within the former territorial limits of Lew Chew, and had obtained from the Japanese government a declaration that they will be observed.

Your action in this matter is approved. It is supposed that the absorption or incorporation of one state by another does not discharge or release, within the limits of the absorbed or incorporated state, the obligation which it may be under to a third power at the time of such absorption or incorporation.

You mention also some threatened anticipated hostile movements contemplated by Japan against the inhabitants of Formosa, and that information had been obtained by you from Mr. Le Gendre, United States consul at Amoy, who chanced to be at the time at Yedo, with reference to the island of Formosa, and had been communicated by you to the Japanese government.

Not knowing the precise objects for which the Japanese government intend to make the knowledge obtained from you available, I am not prepared to express an opinion whether your action, in this regard, is or is not to be approved. Further information and the use which the Japanese government may make of the information which you furnished may decide this point.

I am, &c.,

HAMILTON FISH.

Mr. Low to Mr. Fish.

No. 266.]

LEGATION OF THE UNITED STATES,

Peking, May 13, 1873. (Received July 7.)

SIR: Herewith I beg to transmit copy of a letter received from Mr. Consul Sheppard, of Tien-tsin, giving an account of the proceedings of the Japanese embassy while at that place. It is interesting, and will repay perusal.

After the embassy closed their business there they came on to Peking, arriving here on the 7th instant. They occupy a temple in this city about one mile from this legation.

The morning after their arrival General Le Gendre called upon me. He came, he said, as an American citizen to pay his respects to the American minister. He took particular pains to impress me with the facts that his visit was unofficial; also, that he was unprepared to give any information as to the embassy with which he is connected, or its business; to which I replied that I had no desire to meddle with the business of the Japanese.

If, however, the ambassador should at any time need my good offices, I said it would afford me pleasure to render him such assistance as I could, consistently with my other duties. In the course of the conversation I discovered the real object of the general's visit, which was to intimate that the Japanese ambassador would insist that his superior rank should be recognized by all the ministers here, native and foreign; in other words, that he should expect all the foreign representatives and the Chinese ministers, including Prince Kung, to call upon him.

In response, I said that it was extremely doubtful whether such a claim could be made properly; that if made and insisted on, it would most likely isolate the ambassador from the other foreign representatives, and prevent all personal intercourse between him and the Chinese government.

I further observed that I was not familiar with any rule of etiquette which would justify an ambassador in taking rank over an envoy until after he had been received and recognized by the head of the government to which he is accredited. But, aside from the absolute right and wrong of this case, there are strong reasons why the foreign ministers should not accede to the request. They are now in joint negotiation with the Chinese government concerning a question that is of great importance to all the treaty powers. The business seems now to be in a fair way to an amicable and proper settlement. Were the Japanese ambassador to be recognized as the dean of the diplomatic body, and take part in the negotiations now pending it would have the effect to reopen the discussion, and this would cause delay, which would probably defeat what now seems nearly gained. I concluded by saying that, owing to my present physical infirmities, the question of making calls of ceremony could hardly be considered a practical one with me; that the decision concerning the question raised lay with my colleagues chiefly, and suggesting that they be consulted.

The general seemed to be very decided in his opinions; he affirmed, with considerable warmth, that it would be derogatory to the dignity of the ambassador were he to recede from the position indicated. In support of his view of the case, he referred me to the rules laid down by the Congress of Vienna of 19th March, 1815; and to the published account of the reception of Count Fleury, as French ambassador at St. Petersburg. He was also so indiscreet as to indulge in a menace, to the effect that in case the foreign ministers failed to recognize the claims set up by the ambassador, the interests of their governments in Japan would probably be made to suffer for it.

Subsequently the general consulted with the Russian minister, and through him, as dean, with those of England and France, all of whom most emphatically declined to yield to what they considered an unauthorized assumption put forward by the ambassador, or his counsellor, or both.

From what the Russian minister has told me about his interview with General Le Gendre, the latter, I infer, made use of the same arguments and threats that he did in his conversation with me. He also submitted to General Vlangaly a long written memorandum on the subject, and asked that he and his colleagues would reply to it. No answer has, I hear, been returned, nor has any notice been taken of the general's memorandum.

I may add that General Le Gendre's action in this matter has made a very unfavorable impression upon my colleagues; it has evidently increased their jealousy and distrust of him. If he displays no more discretion when dealing with the Chinese ministers, his presence here will do the Japanese much harm, I fear.

I have, &c.,

FREDERICK F. LOW.

P. S.—Since writing the foregoing General Vlangaly has called to say that he had just received a note from General Le Gendre to the effect that after the ambassador notifies his presence in Peking to the Chinese government he will make an unofficial call on the foreign ministers. He also desires to recall the memorandum before referred to.

F. F. L.

[Inclosure 1.]

Mr. Sheppard to Mr. Low.

UNITED STATES CONSULATE,

Tien-tsin, May 7, 1873.

SIR: The recent meeting of the Japanese ambassador with the viceroy of this province at Tien-tsin, for the purpose of ratifying the treaty lately entered into between Japan and China, has attracted so much attention that I beg to lay before you a brief account of the official interchanges which took place between the ministers of the two countries, together with a few facts and data connected therewith, which I have thought might not be without value to yourself.

Taneomi Soyeshima, the ambassador extraordinary from Japan, accompanied by a Japanese admiral, arrived at Taku about the 19th of April. The flag-ship which brought the embassy being unable to cross the bar anchored outside, and on the day following the American steamer Millet was placed at the disposal of the ambassador, who, accompanied by the admiral, secretary, interpreters, and attachés, embarked at once, and reached Tien-tsin at 7 o'clock p. m.

I should mention that C. W. Le Gendre, esq., late United States consul at Amoy, who is attached to the embassy in the capacity of adviser, had reached Tien-tsin the day previous by the steamer Shanghai from Shanghai. The interest and curiosity which is always excited in the minds of the Chinese by the presence of Japa-

nese in this country was greatly heightened in this instance by the fact that the Japanese appeared here for the first time in foreign clothes, i. e., European costume. Among the lower classes this fact simply provoked good-natured, idle curiosity, as all novelty does among the simple-minded countrymen, but among the literati and official classes a very different feeling was plainly manifest.

Two days after their arrival the customs Taotai of Tien-tsin was deputed to convey to the ambassador the viceroy's compliments and assurances of friendly feeling on the part of the Chinese government toward Japan, and to arrange for an official interview. An interview between the ambassador and Li Hung Chang was accordingly arranged to take place at the viceroy's yamen on the following day. In due time the viceroy, with the customs and the territorial Taotais and the prefect of Tien-tsin, accompanied by a large and imposing retinue, returned the ambassador's visit. These two visits were ceremonial and preliminary to the final meeting for the exchange and ratification of the treaty which took place on the 30th of April, at the shau' hui kuan in the city of Tien-tsin. The particulars of what transpired at these several interviews have not, of course, been made public officially. But by reports from Chinese sources I have gathered a few incidents connected therewith which seem worthy of note. While I am satisfied from other sources of information that these reports are substantially correct, I give them to you as matter of report simply, without vouching for their correctness. General Le Gendre, whom I before mentioned as connected with the embassy, was present at each of the two interviews which I have named, as also at the final meeting of ratification on the 30th of April above mentioned.

It is reported among the Chinese that at the first one of these interviews the viceroy, after being introduced, inquired of the ambassador, "Who is this foreigner; what is his business here?" or questions to that effect. The ambassador's answer was that he was here at the request and by the authority of the Japanese government.

The viceroy replied that "We," meaning the Chinese and the Japanese, "have made other treaties before this one, and we did not find the need of foreigners to advise us, and what reason is there for it now?" He insisted that he could not recognize General Le Gendre in any official capacity relating to the embassy.

At each of the first two interviews named the viceroy's conduct towards General Le Gendre was studiously cold and uncourteous. At the final meeting, on the 30th of April, the viceroy, however, saw fit to entirely change his demeanor toward him, and on this occasion his extravagant politeness was only equalled by his former incivility and rudeness.

As far as I have been able to learn, the intercourse between the ambassador and the viceroy was pleasant enough. There is, however, no disguising the fact that the ruling classes here, including his excellency the viceroy, hold the Japanese in sovereign contempt. The adoption of foreign dress and foreign manners by the Japanese has stung almost to exasperation the proud, stolid Chinese.

It is deeply to be regretted that Li Hung Chang should have taken advantage of his high official position, as it would seem he has done in this instance, to promote and strengthen the exclusive and selfish spirit of distrust of foreigners and foreign influences, so much indulged in by the pompous, conceited and too often ignorant mandarins.

The viceroy's ungracious demeanor toward General Le Gendre did not arise, I think, from personal considerations. The fact that the Japanese had seemingly identified themselves with foreigners by employing a foreigner adviser was so entirely at variance with the viceroy's ideas of Oriental superiority that we could not resist giving his cousins from the "Rising Sun" a left-handed slap for submitting to or seeking after the guidance of western barbarians. This little incident, otherwise unworthy of notice, becomes very significant in view of the recent advances toward modern civilization made by the Japanese, and of the relations between that country and China. It gives, also, one more unhappy proof of the distrust and dislike of western peoples among the ruling classes of China.

Of the nature and conditions of the new treaty just ratified nothing has as yet transpired.

I am, &c.,

ELI T. SHEPPARD,
United States Consul.

INSECTIVOROUS PLANTS.

(Continued)

II-

If the Venus's Fly-trap (of which we spoke on page 216) stood alone, it would be doubly marvellous—first, on account of its carnivorous propensities, and then as constituting a real anomaly in organic nature, to which nothing leads up. Before acquiescing in such a conclusion, the modern naturalist would scrutinize its relatives. Now the nearest relatives of our vegetable wonder are the Sundews.

While *Dionaea* is as local in habitation as it is singular in structure and habits, the *Droseras* or Sundews are widely diffused over the world and numerous in species. The two whose captivating habits have attracted attention abound in bogs all round the northern hemisphere. That flies are caught by them is a matter of common observation; but this was thought to be purely accidental. They spread out from the root a circle of small leaves, the upper face of which especially is beset and the margin fringed with stout bristles (or what seem to be such, although the structure is more complex), tipped by the secreting gland, which produces, while in vigorous state, a globule of clear liquid like a drop of dew—whence the name, both Greek and English. One expects these seeming dewdrops to be dissipated by the morning sun; but they remain unaffected. A touch shows that the glistening drops are glutinous and extremely tenacious, as flies learn to their cost on alighting, perhaps to sip the tempting liquid, which acts first as a decoy and then like birdlime. A small fly is held so fast, and in its struggles comes into contact with so many of these glutinous globules, that it seldom escapes.

The result is much the same to the insect, whether captured in the trap of *Dionaea* or stuck fast to the lured bristles of *Drosera*. As there are various plants upon whose glandular hairs or glutinous surfaces small insects are habitually caught and perished, it might be pure coincidence that the most effectual arrangement of the kind happens to occur in the nearest relatives of *Dionaea*. Roth, a keen German botanist of the eighteenth century, was the first to detect, or at least to record, some evidence of intention in *Drosera*, and to compare its action with that of *Dionaea*, which, through Ellis's account, had shortly before been made known in Europe. He noticed the telling fact that not only the bristles which the unfortunate insect had come in contact with, but also the surrounding rows, before widely spreading, curved inwards one by one, although they had not been touched, so as within a few hours to press their glutinous tips likewise against the body of the captive insect—thus doubling or quadrupling the bonds of the victim and (as we may now suspect) the surfaces through which some part of the animal substance may be imbibed. For Roth surmised that both these plants were, in their way, predaceous. He even observed that the disk of the *Drosera*-leaf itself often became concave and enveloped the prey. These facts, although mentioned now and then in some succeeding work were generally forgotten, except that of the adhesion of small insects to the leaves of Sundews, which must have been observed in every generation. Up to and even within a few years past, if any reference was made to these asserted movements (as by such eminent physiologists as Meyen and Treviranus) it was to discredit them: Not because they are difficult to verify, but because, being naturally thought improbable, it was easier to deny or ignore them. So completely had the knowledge of almost a century ago died out in later years that, when the subject was taken up anew in our days by Mr. Darwin, he had, as we remember, to advertise for it, by sending a "note and query" to the magazines asking where any account of the fly-catching of the leaves of Sundew was recorded.

When Mr. Darwin takes a matter of this sort in hand, he is not likely to leave it where he found it. He not only confirmed all Roth's observations as to the incurving of the bristles towards and upon an insect entangled on any part of the disk of the leaf, but also found that they responded similarly to a bit of muscle or other animal substance, while to any particles of inorganic matter they were nearly indifferent. To minute fragments of carbonate of ammonia, however, they were more responsive. As these remarkable results, attained (as we are able to attest) half a dozen years ago, remained unpublished (being portions of an investigation not yet completed), it would have been hardly proper to mention them, were it not that independent observers were beginning to bring out the same or similar facts. Mrs. Treat of New Jersey noticed the habitual enfolding of the leaf in the longer-leaved species of Sundew (*Amer. Jour. Science* for November, 1871), as was then thought for the first time—Roth's and Withering's observations not having been looked up. In recording this, the

next year, in a very little book, entitled 'How Plants Behave,' the opportunity was taken to mention, in the briefest way, the capital discovery of Mr. Darwin that the leaves of *Drosera* act differently when different objects are placed upon them, the bristles closing upon a particle of raw meat as upon a living insect, while to a particle of chalk or wood they are nearly inactive. The same facts were independently brought out by Mr. A. W. Bennett at last year's meeting of the British Association for the Advancement of Science, and have been mentioned in the journals.

If to these statements, which we may certify, were added some far more extraordinary ones, communicated to the French Academy of Science in May last by M. Zeigler, a stranger story of discrimination on the part of Sundew-bristles would be told. But it is safer to wait for the report of the committee to which these marvels were referred, and conclude this sufficiently "strange, eventful history" with some details of experiments made last summer by Mrs. Treat of New Jersey, and published in the December number of the *American Naturalist*. It is well to note that Mrs. Treat selects for publication the observations of one particular day in July, when the Sundew-leaves were unusually active; for their moods vary with the weather, and also in other unaccountable ways, although in general the sultrier days are the most appetizing:

"At fifteen minutes past ten of the same day I placed bits of raw beef on some of the most vigorous leaves of *Drosera longifolia*. Ten minutes past twelve, two of the leaves had folded around the beef, hiding it from sight. Half-past eleven of the same day, I placed living flies on the leaves of *D. longifolia*. At 12° 45' one of the leaves had folded entirely around its victim, the other leaves had each folded around a fly. . . . I tried mineral substances—bits of dry chalk, magnesia, and pebbles. In twenty-four hours, neither the leaves nor their bristles had made any move like clasping these articles. I wet a piece of chalk in water, and in less than an hour the bristles were curving about it, but soon unfolded again, leaving the chalk free on the blade of the leaf." Parallel experiments made on *D. rotundifolia* with bits of beef and of chalk gave the same results as to the action of the bristles; while with a piece of raw apple, after eleven hours, "part of the bristles were clasping it, but not as closely as the beef," and in twenty-four hours "nearly all the bristles were curved toward it, but not many of the glands were touching it."

To make such observations is as easy as it is interesting. Throughout the summer one has only to transfer plants of *Drosera* from the bogs into pots or pans filled with wet moss; if need be, allowing them to become established in the somewhat changed conditions, or even to put out fresh leaves, and to watch their action or expedite it by placing small flies upon the disk of the leaves. The more common round-leaved Sundew acts as well as the other by its bristles, and the leaf itself is sometimes almost equally prehensile, although in a different way, enfolding the whole border instead of the summit only. Very curious, and even somewhat painful, is the sight when a fly, alighting upon the central down-tipped bristles, is held as fast as by a spider's web; while the efforts to escape not only entangle the insect more hopelessly as they exhaust its strength, but call into action the surrounding bristles, which, one by one, add to the number of the bonds, each by itself apparently feeble, but in their combination so effectual that the fly may be likened to the sleeping Gulliver made fast in the tiny but multitudinous coils of the Lilliputians. Anybody who can believe that such an apparatus was not intended to capture flies might say the same of a spider's web.

Is the intention here to be thought any the less real because there are other species of *Drosera* which are not so perfectly adapted for fly-catching, owing to the form of their leaves and the partial or total want of co-operation of their scattered bristles? One such species, *D. filiformis*, the thread-leaved Sundew, is not uncommon in this country, both north and south of the district that *Dionaea* locally inhabits. Its leaves are long and thread-shaped, beset throughout with glutinous gland-tipped bristles, but wholly destitute of a blade. Flies, even large ones, and even moths and butterflies, as Mrs. Treat and Mr. Canby affirm (in the *American Naturalist*), get stuck fast to these bristles, whence they seldom escape. Accidental as such captures are, even these thread-shaped leaves respond more or less to the contact, somewhat in the manner of their brethren. In Mr. Canby's recent and simple experiments, made at Mr. Darwin's suggestion, when a small fly alights upon a leaf a little below its slender apex, or when a bit of crushed fly is there affixed, within a few hours the tip of the leaf bends at the point of contact, and curves over around the body in question; and Mrs. Treat even found that when living flies

were pinned at half an inch in distance from the leaves, these in forty minutes had bent their tips perceptibly towards the flies, and in less than two hours reached them! If this be confirmed—and such a statement needs ample confirmation—then it may be suspected that these slender leaves not only incurve after prolonged contact, just as do the left-stalks of many climbers, but also make frequent and independent circular sweeps, in the manner of twining stems and of many tendrils.

Correlated movements like these indicate purpose. When performed by climbing plants, the object and the advantage are obvious. That the apparatus and the actions of *Dionaea* and *Drosera* are purposeless and without advantage to the plants themselves, may have been believed in former days, when it was likewise conceived that abortive and functionless organs were specially created "for the sake of symmetry" and to display a plan; but this is not according to the genius of modern science.

If the cases of insecticide next be considered, such evidence of intent is wanting, but other and circumstantial evidence may be had sufficient to warrant conviction. *Sarracenia* have hollow leaves in the form of pitchers or trumpet-shaped tubes, containing water, in which flies and other insects are habitually drowned. They are all natives of the eastern side of North America, growing in bogs or low ground so that they cannot be supposed to need the water as such. Indeed, they secrete a part if not all of it. The commonest species, and the only one at the North, which ranges from Newfoundland to Florida, has a broad-mouthed pitcher with an upright lid into which rain must needs fall more or less. The yellow *Sarracenia*, with long tubular leaves, called "trumpets" in the Southern States, has an arching or partly upright lid, raised well above the orifice, so that some water may rain in; but a portion is certainly secreted there, and may be seen bedewing the sides and collected at the bottom before the mouth opens. In other species, the orifice is so completely overarched as essentially to prevent the access of water from without. In these tubes, mainly in the water, flies and other insects accumulate, perish, and decompose. Flies thrown into the openmouthed tube of the yellow *Sarracenia*, even when free from water, are unable to get out—one hardly sees why, except that they cannot fly directly upwards; and a microscopic *chætax-de-frise* of fine, sharp-pointed bristles which lines most of the interior, pointing strictly downwards, may be a more effectual obstacle to crawling up the sides than one would think possible. On the inside of the lid or hood of the purple Northern species, the bristles are much stronger; but an insect might escape by the front without encountering these. In this species, the pitchers, however, are so well supplied with water that the insects which somehow are most abundantly attracted thither are effectually drowned, and the contents all summer long are in the condition of a right liquid manure.

That the tubes or pitchers of the Southern species are equally attractive and fatal to flies is well known. Indeed, they are said to be taken into houses and used as fly-traps. There is no perceptible odor to draw insects, except what arises from the decomposition of macerated victims; nor is any kind of lure to be detected at the mouth of the pitcher of the common purple-flowered species. Some incredulity was therefore natural when it was stated by a Carolinian correspondent (Mr. B. F. Grady) that in the long-leaved, yellow-flowered species the lid just above the mouth of the tubular pitcher habitually secretes drops of a sweet and viscid liquid, which attracts flies and apparently intoxicates them, since those that sip it soon become unsteady in gait and mostly fall irretrievably into the well beneath. But upon cultivating plants of this species, obtained for the purpose, the existence of this lure was abundantly verified; and although we cannot vouch for its inebriating quality, we can no longer regard it as unlikely.

No sooner was it thus ascertained that at least one species of *Sarracenia* allures flies to their ruin, than it began to appear that—just as in the case of *Drosera*—most of this was a mere revival of obsolete knowledge. The "insect-destroying process" was known and well described sixty years ago, the part played by the sweet exudation indicated, and even the intoxication perhaps hinted at although evidently little thought of in those ante-temperance days. Dr. James Macbride of South Carolina—the early associate of Elliott in his 'Botany of South Carolina and Georgia,' and to whose death, at the age of thirty-three, cutting short a life of remarkable promise, the latter touchingly alludes in the preface to his second volume—sent to Sir James Edward Smith an account of his observations upon this subject, made in 1810 and the following years. This was read to the Linnean Society in 1815, and published in the twelfth

volume of its 'Transactions.' From this forgotten paper (to which attention has lately been recalled) we cull the following extracts, premising that the observations mostly relate to a third species, *Sarracenia adunca*, alias *variolaris*, which is said to be the most efficient fly-catcher of the kind:

"If, in the months of May, June, or July, when the leaves of these plants perform their extraordinary functions in the greatest perfection, some of them be removed to a house and fixed in an erect position, it will soon be perceived that flies are attracted by them. These insects immediately approach the fauces of the leaves, and, leaning over their edges, appear to sip with eagerness something from their internal surfaces. In this position they linger; but at length, allured as it would seem by the pleasure of taste, they enter the tubes. The fly which has thus changed its situation will be seen to stand unsteadily; it totters for a few seconds, trips, and falls to the bottom of the tube, where it is either drowned or attempts in vain to ascend against the points of the hairs. The fly seldom takes wing in its fall and escapes. . . . In a house much infested by flies, this entrapment goes on so rapidly that a tube is filled in a few hours, and it becomes necessary to add water, the natural quantity being insufficient to drown the imprisoned insects. The leaves of *S. adunca* and *rubra* [a fourth species] might well be employed as fly-catchers; indeed, I am credibly informed they are in some neighborhoods. The leaves of the *S. flava* [the species to which our foregoing remarks mainly relate], although they are very capacious and often grow to the height of three feet or more, are never found to contain so many insects as those of the species above-mentioned.

"The cause which attracts flies is evidently a sweet, viscid substance resembling honey, secreted by or exuding from the internal surface of the tube. . . . From the margin where it commences, it does not extend lower than one-fourth of an inch."

"The falling of the insect as soon as it enters the tube is wholly attributable to the downward or inverted position of the hairs of the internal surface of the leaf. At the bottom of a tube split open, the hairs are plainly discernible pointing downwards; as the eye ranges upward, they gradually become shorter and attenuated, till at, or just below the surface covered by the bait they are no longer perceptible to the naked eye, nor to the most delicate touch. It is here that the fly cannot take a hold sufficiently strong to support itself, but falls. The inability of insects to crawl up against the points of the hairs I have often tested in the most satisfactory manner."

From the last paragraph it may be inferred that Dr. Macbride did not suspect any inebriating property in the nectar, and in a closing note there is a conjecture of an impalpable loose powder in *S. flava*, at the place where the fly stands so unsteadily, and from which it is supposed to slide. We incline to take Mr. Grady's view of the case.

The complete oblivion into which this paper and the whole subject had fallen is the more remarkable when it is seen that both are briefly but explicitly referred to in Elliott's book, with which botanists are familiar.

It is not so wonderful that the far earlier allusion to these facts by the younger Bartram should have been overlooked or disregarded. With the genuine love of nature and fondness for exploration, William Bartram did not inherit the simplicity of his father, the earliest native Botanist of this country. Fine writing was his foible; and the preface to his well-known 'Travels' (published at Philadelphia in 1761) is its full blown illustration, sometimes perhaps deserving the epithet which he applies to the palms of Florida—that of pomposity. In this preface he declares that "all the *Sarracenia*s are insect-catchers, and so is the *Drosera rotundifolia*." "Whether the insects caught in their leaves, and which dissolve and mix with the fluid, serve for aliment or support to these kind of plants, is doubtful," he thinks, but he should be credited with the suggestion. In one sentence he speaks of the quantities which, "being invited down to sip the mellifluous exuvia from the interior surface of the tube, where they inevitably perish," being prevented from returning by the stiff hairs all pointing downwards. This, if it refers to the sweet secretion, would place it below, and not as it is, above the bristly surface, while the liquid below, charged with decomposing insects, is declared in an earlier sentence to be "cool and animating, limpid as the morning dew." Bartram was evidently writing from memory; and it is very doubtful if he ever distinctly recognized the sweet exudation which entices.

Why should these plants take to organic food more than others? If we cannot answer the question, we may take a probable step towards it. For plants that are not parasitic, these, especially the

Sundews, have much less than the ordinary amount of chlorophyll—that is, of the universal leafgreen upon which the formation of organic matter out of inorganic materials depends. These take it instead of making it, to a certain extent.

What is the bearing of these remarkable adaptations and operations upon doctrines of evolution? There seems here to be a field on which the specific creationist, the evolutionist with design, and the necessary evolutionist, may fight out an interesting, if not decisive, "triangular duel."—*N. t. ion.*

Shipping Intelligence.

ARRIVALS.

May 25, *Tancouver*, British steamer, Shaw, 2,800, from London via Hongkong, May 16th, General, to Hudson, Malcolm & Co.
May 25, *Samuel Read*, American ship, White, 652, from Boston, November 4th, General, to Smith Baker & Co.
May 26, *Delphin*, German 3-masted schooner, Lilienthal, 225, from Takow, May 8th, Sugar, to Chinese.
May 27, *Volga*, French steamer, Flambeau, 960, from Hongkong, May 19th, Mails and General, to M. M. Co.
May 28, *Acantha*, British steamer, Young, 950, from Shanghai and Ports, May 19, General, to P. M. S. S. Co.
May 28, *China*, American steamer, Cobb, from San Francisco, 1st May, 3,838, Mails and General, to P. M. S. S. Co.
May 28, *New York*, American steamer, Furber, 2,119, from Hakodate, May 26th, General, to P. M. S. S. Co.
May 29, *Wilhelmina Koch*, Russian barque, Koch, 320, from Takow, May 1st, Sugar, to The Captain.

DEPARTURES.

May 23, *Hutchinson*, American schooner, with auxiliary screw, Shacklebury, 100, for Nagasaki, General, despatched by Captain.
May 24, *Westminster*, British ship, Grose, 1,245, for Manila, Ballast, despatched by Finlay, Richardson & Co.
May 23, *Behar*, British steamer, Andrews, 1,685, for Hongkong, Mails and General, despatched by P. & O. Co.
May 28, *China*, American steamer, Cobb, 3,838, for Hongkong, Mails and General, despatched by P. M. S. S. Co.
May 28, *Golden Age*, American steamer, Coy, 1,870, for Shanghai and Ports, General, despatched by P. M. S. S. Co.

PASSENGERS.

Per British steamer *Tancouver*, from Hongkong:—Mrs. Kenson, 4 children and servant, Messrs. Towse, Rev. P. K. Eason and wife, Comstock, Birt, Mr. and Mrs. Goddard, 2 children and servant, Mr. Ono, Lieut. Anderson, 80th Regt., Messrs. Dunbar, Hardman and wife. For San Francisco:—Mrs. Nobu, two in the 2nd class, and 614 Chinese in the steerage.
Per French steamer *Volga*, from Hongkong:—Col. Munier, Nakashima, Japanese Consul, Yoko, Secretary, Isagie, Alouis, Kinouchi, Gareda, Mashima, Ishee, Many, Ochre, Hetchikoff, Okada, Koga, Eugeorges, Konna, Amama, Gausio and servant, Schnell, Ouriyama, Rosser, Osaki, and J. Thorburn.
Per British steamer *Behar*, for Hongkong:—Messrs. Alex. Ross and wife, Rennell, and 7 Chinese in the steerage.
Per P. M. S. S. *China*, from San Francisco: For Yokohama.—Messrs. J. Allmand, Lieut. Amory, U. S. N., M. Baz ng, Mrs. Burdell, H. S. Browne, Captain De Kraft, U. S. N., A. W. Glennie, T. W. Henchleff, M. V. Hippel, M. Harrison and Wife, J. J. Keeds, J. Kodami, Jean Lemerrier, Dr. Leach, U. S. N., T. Morita, Admiral Pennock, Mrs. Pennock, E. D. Percy, W. H. Rawson, Mr. Riggs, U. S. N., Mrs. Snitzer and Child, Stodder, U. S. N., S. Tashiro, J. C. Wheatley, K. Yoshida, and S. Yamasawa. For Hiogo.—Mr. Chas. Heimann and Wife. For Shanghai.—Messrs. Walter Austin, J. de Cordova, D. McAllister, G. E. Sardnier, and J. G. Vapur. For Hongkong.—Miss Bresson, Messrs. Fred. Koch, and J. C. Porter.
Per British steamer *Acantha*, from Shanghai:—Mrs. Young and 3 children, H. L. Fuller, H. W. Harrison, Dr. H. P. Harvey, J. D. Flitch and servant, H. G. Bates, M. Eda, Rev. J. H. Quinley, M. Arrivet, Ota, Tokuda, H. Goch, C. Howard, 2 Chinese and 20 Japanese in the steerage.
Per American steamer *Golden Age*, for Hiogo:—R. W. Irwin, M. M. D'Arfemille, C. D. Birt, J. Robertson, M. Mitami, Tomi Iwagi, J. Cruikshank, H. S. Browne, C. A. Heimann and wife. For Nagasaki:—Mr. Hardman, wife, child and 2 servants. For Shanghai:—Messrs. W. H. Dalglish, wife and 2 servants, H. W. Pearce, James Wilson, Moore, U.S.N., J. de Cordova, and D. M'Allister.

CARGOES.

Per British steamer *Behar*, for Hongkong:—
Silk 40 bales.
Per British steamer *Acantha*, from Shanghai:—
Treasure \$17,670.

REPORTS.

The American ship *Samuel Read* reports light winds and fine weather during the entire voyage.
The British steamer *Tancouver* reports: left Hongkong at 5 p.m. 16th May. Experienced moderate N.E. winds throughout the entire passage, and arrived at Yokohama on 24th instant.

The German 3-masted schooner *Delphin* reports light winds and calms during the passage, excepting one severe gale from the N. E. on the 19th instant which passed over the vessel, about 100 miles to the Eastward of Van Dieman Strait. Saw a Japanese transport passing Takow on the 6th and steering toward the south end of the island with apparently several hundred men on board; the next day an English gun-boat passed, going in the same direction.

The French steamer *Folga* reports: after passing through Van Dieman Strait, encountered some very severe weather, strong gales with a high cross sea running.

The Russian barque *Wilhelmina Koch* reports very stormy weather, with a heavy head sea throughout the passage.

The U. S. frigate *Tuscarora* has returned to the anchorage.

MERCHANT SHIPPING IN PORT.

STEAMERS.		Destination.
<i>Acantha</i> ...	Young ...	Shanghai and Ports
<i>Naruto</i> ...	DuBois ...	Uncertain
<i>New York</i> ...	Furber ...	Shanghai and Ports
<i>Vancouver</i> ...	Shaw ...	San Francisco
<i>Volga</i> ...	Flambeau ...	Hongkong

SAILING SHIPS.		Destination.
<i>Active</i> ...	291 Campbell ...	Uncertain
<i>Delphin</i> ...	225 Lilienthal ...	Uncertain
<i>Flying Spar</i> ...	735 Croote ...	Uncertain
<i>Samuel Road</i> ...	652 White ...	Uncertain
<i>Sarah Scott</i> ...	565 Estell ...	Uncertain
<i>Scawfell</i> ...	798 Appleby ...	Uncertain
<i>Southern Ocean</i> ...	1,280 Hocketable ...	Uncertain
<i>St. Aubin</i> ...	1,160 Blouet ...	Uncertain
<i>Wilhelmina Koch</i> ...	320 Koch ...	Uncertain

VESSELS OF WAR IN HARBOUR.

French gun-boat ...	Bourayne ...	Captain Rose
U. S. frigate ...	Hartford ...	Captain Calhoun
U. S. corvette ...	Kearse ...	Captain D. B. Harmony
U. S. frigate ...	Tuscarora ...	Captain Belknap
American corvette ...	Lackawanna ...	Captain McCaulley

SHIPPING AT THE SOUTHERN PORTS.

The following are the latest arrivals and departures at Kobe and Nagasaki:—

KOBE SHIPPING INTELLIGENCE.

To May 23rd.

ARRIVALS.—May 17, *Golden Age*, P. M. S. S., from Nagasaki; May 17 *Ellon Castle*, British barq., from Chefoo; May 21, *Costa Rica*, P. M. S. S., from Yokohama; May 22, *Tchikatchoff*, Russian str., from Yokohama.

DEPARTURE.—May 16, *Pride of the Thames*, British barque, for Nagasaki; May 18, *Golden Age*, P. M. S. S., for Yokohama; May 19, *Thistle*, H. B. M. S., for Nagasaki; May 23, *Costa Rica*, P. M. S. S., for Nagasaki.

MERCHANT VESSELS IN HARBOUR.—*Ada Iredale*, British barque; *Charley*, British barque; *Dorothy*, British ship; *Ellon Castle*, Brit. barq.; *Hawaii*, Brit. brig; *Tchikatchoff*, Russian str.

MEN-OF-WAR.—None.

NAGASAKI SHIPPING INTELLIGENCE.

To May 16th.

ARRIVALS.—May 10, *New York*, P. M. S. S., from Shanghai; May 10, *Delta*, P. & O. str., from Shanghai; May 10, *Lap Tek*, Brit. str., Shanghai; May 12, *Britain's Pride*, British brig, from Shanghai; May 12, *Diamond*, German barq., from Hiogo; May 14, *Golden Age*, P. M. S. S., from Shanghai; May 15, *Annie Muriel*, Brit. schr., from Hiogo.

DEPARTURES.—May 10, *Flying Spar*, British barq., for Yokohama; May 11, *New York*, P. M. S. S., for Hiogo; May 11, *Acantha*, Brit. str., for Shanghai; May 11, *Cowrier*, Russian steamer, for Shanghai; May 11, *Croote*, British str., for Shanghai; May 13, *Golden Age*, P. M. S. S., for Hiogo; May 16, *Adeline*, German schr., for Chefoo; May 16, *Brewster*, Am. schr., for Vladivostock; May 16, *Lap Tek*, British str., for Shanghai.

MERCHANT VESSELS IN HARBOUR.—*Annie Muriel*, British schr., from Hiogo; *Argus*, Brit. str. from Hiogo; *Britain's Pride*, Brit. barque, from Shanghai; *Diamond*, German barque, from Hiogo; *Gorgina*, British brig, from Newchwang; *Mistletoe*, British barque, from Yokohama.

MEN-OF-WAR IN HARBOUR.—*Albat*, H. I. R. M. D.-boat; *Deerf*, H. B. M. gun-boat; *Japanese*, H. I. R. M. Corv.

VESSELS EXPECTED.

SAILED.

FOR CHINA PORTS, WITH GOODS FOR JAPAN.

FROM LONDON, via SHANGHAI.—“Glenlyon” str.

FROM LIVERPOOL.—“Serpodon” str.

FROM HAMBURG.—

FOR JAPAN DIRECT.

FROM LONDON, FOR YOKOHAMA.—“F. C. Clarke,”

YOKOHAMA AND HIOGO.—“Harrington,”

“Mary Ann Wilson,” “Coulmakyle,”

FROM LIVERPOOL, FOR YOKOHAMA AND HIOGO.—“Ems,” “Chusan,” “Cathaya,”

FROM BREMEN.—“Humboldt,” str.
FROM GLASGOW.—“Glenearn” str.
FROM NEW YORK.—“New Republic.”
FROM SHIELDS.—“Ariantes.”
FROM CARDIFF.—“Earl of Dufferin.”

LOADING.

AT LIVERPOOL.—“Ajax” str.; “Deucalion” str.; “Menelaus,” str.
AT LONDON, FOR YOKOHAMA, HIOGO AND NAGASAKI.—“Japan” str.; “Montgomeryshire” str.; “Estepona,”

AT LONDON, FOR YOKOHAMA AND HIOGO.—“Ambassador,” “Suffolk,” “Remus,” “John Milton,” “Denbighshire,” “Laurel.”

AT LONDON, FOR YOKOHAMA.—

AT LIVERPOOL, FOR YOKOHAMA AND HIOGO.—“Jessica.”

AT LIVERPOOL, FOR YOKOHAMA.—

IMPERIAL GOVERNMENT RAILWAYS.

TIME AND FARE TABLES.

MORNING UP TRAINS.

Yokohama,	8.0	9.0	10.0	11.0
Kanagawa,	8.06	9.06	10.06	11.06
Tsurumi,	8.17	9.17	10.17	11.17
Kawasaki,	8.26	9.26	10.26	11.26
Shinagawa,	8.43	9.43	10.43	11.43
Shinbasi, Tokei,	8.53	9.53	10.53	11.53

AFTERNOON UP TRAINS.

Yokohama,	2.00	3.00	4.00	5.00	6.00	7.00	10.0
Kanagawa,	2.06	3.06	4.06	5.06	6.06	7.06	10.6
Tsurumi,	2.17	3.17	4.17	5.17	6.17	7.17	10.17
Kawasaki,	2.26	3.26	4.26	5.26	6.26	7.26	10.26
Shinagawa,	2.43	3.43	4.43	5.43	6.43	7.43	10.43
Shinbasi, Tokei,	2.53	3.53	4.53	5.53	6.53	7.53	10.53

MORNING DOWN TRAINS.

Shinbasi, Tokei,	8.00	9.00	10.00	11.00
Shinagawa,	8.08	9.08	10.08	11.08
Kawasaki,	8.26	9.26	10.26	11.26
Tsurumi,	8.34	9.34	10.34	11.34
Kanagawa,	8.45	9.45	10.45	11.45
Yokohama,	8.53	9.53	10.53	11.53

AFTERNOON DOWN TRAINS.

Shinbasi, Tokei,	2.00	3.00	4.00	5.00	6.00	7.00	10.0
Shinagawa,	2.08	3.08	4.08	5.08	6.08	7.08	10.08
Kawasaki,	2.26	3.26	4.26	5.26	6.26	7.26	10.26
Tsurumi,	2.34	3.34	4.34	5.34	6.34	7.34	10.34
Kanagawa,	2.45	3.45	4.45	5.45	6.45	7.45	10.45
Yokohama,	2.53	3.53	4.53	5.53	6.53	7.53	10.53

FARES FROM YOKOHAMA TO

	1ST CLASS.	2ND CLASS.	3RD CLASS.
	sen.	sen.	sen.
Kanagawa,	18.75	12.50	6.25
Tsurumi,	37.50	25.00	12.50
Kawasaki,	56.25	37.50	18.25
Shinagawa,	93.75	62.50	31.25
Shinbasi, Tokei,	\$1.12.50	75.00	37.50

FARES FROM TOKEI (SHINBASI) TO

Shinagawa,	18.75	12.50	6.25
Kawasaki,	56.25	37.50	18.75
Tsurumi,	75.00	50.00	25.00
Kanagawa,	93.75	62.50	31.25
Yokohama,	\$1.12.50	75.00	37.50

One quarter bu will be taken as 6.25 sen.

The Doors of the Station will be closed three minutes before the time for starting the Trains.

NEXT MAIL DUE FROM

	Per	Date
HONGKONG AND EUROPE,	M. M. Str.	June 10th
AMERICA,	P. M. S. S.	
HONGKONG AND EUROPE,	P. & O. Str.	June 3rd
SHANGHAI, HIOGO & NAGASAKI	P. M. S. S.	June 4th
HAOKODATE,	P. M. S. S.	

NEXT MAIL LEAVES FOR

	Per	Date
HONGKONG,	P. M. S. S.	
HONGKONG AND EUROPE,	M. M. Str.	June 3rd
AMERICA,	P. M. S. S.	
HONGKONG AND EUROPE,	P. & O. Str.	June 10th
SHANGHAI, HIOGO & NAGASAKI	P. M. S. S.	June 2nd
HAOKODATE,	P. M. S. S.	

POST OFFICE NOTIFICATION.

A private ship mail will close for SAN FRANCISCO per steamer *Vancouver*, at 9 A.M., TO-MORROW, Sunday, the 31st instant.

F. G. MACHADO,—Postmaster.

Post Office, Yokohama, May 30, 1874.

THE "JAPAN MAIL."

IS PUBLISHED ON SATURDAY EVENING.

The following are the Terms of Subscription to this Journal. The "WEEKLY" Edition. Per annum, \$24: Six months, \$13: Three months, \$7.

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TERMS.—Per annum, \$12; Six months, \$7; Three months, \$4.

AGENTS OF THE PAPER.

LONDON..... G. Street, 30, Cornhill.
 " Bates, Hendy & Co., 4, Old Jewry.
 NEW YORK..... A. Wind, 133, Nassau Street.
 HONGKONG..... Lane, Crawford & Co.
 SHANGHAI..... Kelly & Co.
 HIOGO & OZAKA..... F. Walsh & Co.
 NAGASAKI..... China & Japan Trading Co.

Who are authorized to receive Subscriptions and Advertisements for these Papers.

HAVE YOU SEEN "THE ALDINE?"

ALTHOUGH a large number were received, we have only a few copies of last year's numbers, bound, left; and if you desire an exceedingly handsome, chaste, and satisfactory volume of "Fine Art," you will do well to secure one of these.

COME AND SEE THEM,

AND ALSO,

THE FINE

"Mason & Hamlin Organs."

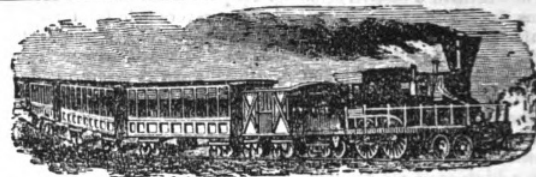
JUST TO HAND.

F. R. WETMORE & Co.,

28, Main Street.

Yokohama, May 19, 1874.

tf.



IMPERIAL GOVERNMENT RAILWAYS.

ALTERATION OF PASSENGER FARES.

ON and after MONDAY, the 15th June, reduced fares will be charged for Passengers between Shinbasi and Yokohama and intermediate Stations, as per following Scale:—

From	Class To	Shinbasi.	Shinagawa.	Kawasaki.	Tsurumi.	Kanagawa.	Yokohama.
Shinbasi....	First	...	15 Sen	45 Sen	60 Sen	75 Sen	1.00 Yen
	Second	...	10 "	30 "	40 "	50 "	60 Sen
	Third	...	05 "	15 "	20 "	25 "	30 "
Shinagawa {	First	15 Sen	...	30 Sen	45 Sen	60 Sen	75 Sen
	Second	10 "	...	20 "	30 "	40 "	50 "
	Third	05 "	...	10 "	15 "	20 "	25 "
Kawasaki... {	First	45 Sen	30 Sen	...	15 Sen	30 Sen	45 Sen
	Second	30 "	20 "	...	10 "	20 "	30 "
	Third	15 "	10 "	...	05 "	10 "	15 "
Tsurumi.... {	First	60 Sen	45 "	15 Sen	...	15 Sen	30 Sen
	Second	40 "	30 "	10 "	...	10 "	20 "
	Third	20 "	15 "	05 "	...	05 "	10 "
Kanagawa {	First	75 Sen	60 Sen	30 Sen	15 Sen	...	15 Sen
	Second	50 "	40 "	20 "	10 "	...	10 "
	Third	25 "	20 "	10 "	05 "	...	05 "
Yokohama {	First	1.00 Yen	75 Sen	45 Sen	30 Sen	15 Sen	...
	Second	60 Sen	50 "	30 "	20 "	10 "	...
	Third	30 "	25 "	15 "	10 "	05 "	...

A REDUCED TARIFF of Charges for the Conveyance of GOODS between SHINBASI and YOKOHAMA will also come in force on the 15th June.

BY ORDER,

Im.

Yokohama, May 29, 1874.

METEOROLOGICAL OBSERVATIONS.

LATITUDE. 35° 25' 41" North.

LONGITUDE. 139° 39' 0" East.

OBSERVATIONS TAKEN AT 9 A.M. LOCAL TIME.

Day of Week.	Day of Month.	OBSERVATIONS TAKEN AT 9 A.M. LOCAL TIME.														
		Barometer.	Attached Thermometer.	Hygrometer.					Wind.		Cloud. 0—10.	During past 24 hrs.				
				Dry bulb.	Wet bulb.	Dew Point.	Elastic force of Vapour.	Humidity 0—1.	Direction.	Force in lbs. per sq. ft.		Max. in air.	Min. in air.	Mean in air.	Rain in Inches.	Ozone.
Sat.	May. 23	30.17	62.0	60.5	58.0	56.3	.454	.861	N. E.	.04	7	68.5	54.5	61.5	.00	3.
Sun	" 24	30.07	64.5	65.5	63.0	61.6	.547	.871	calm.	.00	3	73.0	56.0	64.5	.00	4.
Mon	" 25	29.94	64.0	63.5	62.0	61.7	.550	.993	N. W.	.15	5	76.0	52.0	64.0	.00	3.
Tues	" 26	29.87	65.5	67.0	63.5	61.5	.547	.826	calm.	.00	3	74.5	51.5	63.0	.00	3.
Wed	" 27	29.89	68.5	70.0	66.0	63.9	.594	.811	S. E.	.42	3	74.5	55.5	65.0	.00	5.
Thurs	" 28	29.84	65.5	66.5	53.0	61.0	.586	.825	N. E.	.13	2	79.5	51.0	65.2	1.54	6.
Fri	" 29	29.84	67.5	68.5	65.5	63.9	.595	.852	E. S. E.	.56	8	74.5	57.5	66.0	.00	6.
Mean		29.94	65.3	65.9	63.0	61.4	.553	.862		.18	4	74.5	54.0	64.1	.22	4.

CAMP, Yokohama, May 29th, 1874.

J. H. SANDWITH,—Lieut.,
R.M.L.I.

COMMERCIAL INTELLIGENCE.

YOKOHAMA, MAY 30TH, 1874.

THE following mail arrivals and departures have occurred during the present week. Arrivals:—May 27th, M. M. steamer *Volga*, from Hongkong with European mails to 12th April. May 28th P. M. S. S. steamer *China* from San Francisco. Departures:—P. & O. S. N. Co.'s *Behar*, for Europe,

The Shanghai steamer brought \$17,670 specie.

The *Volga's* cargo comprised 53 bales of Silk for Europe.

Cotton Fabrics.—Considerable arrivals, increasing our stocks, and the rise in exchange rates have induced some importers to meet the limited demand existing, and a moderate business has been done during the past week, although at the low quotations last advised only. The inquiry has been chiefly for *Shirtings*, lbs. 7 and lbs. 9. We make no change in quotations.

Yarns.—There has been some enquiry for 16-24 s. and 28-32 s. during the week with, however, only the slightest improvement in the latter. The week closes with a slender demand.

Woollens.—Business in this staple has been somewhat less active than during the preceding week, and sales have been on an unimportant scale. We are unable to record any improvement in rates which continue low.

Iron and Metals.—This market is sluggish. In the presence of continued accessions to stocks prices have still further yielded and cannot be quoted higher than as given in our table.

Sugar.—We have no change to report in prices since the date of our last. The arrivals from Formosa during the week have been the *Dolphin* and *Wilhelmina Koch*, both from Takao, with 11,500 piculs, and the sales are as follows:—

11,870 Bags Taiwanfoo	at \$3.85
3,000 „ „	at \$3.80
900 „ „	at \$3.95

Stocks in first hands of Formosa kinds are estimated at 20,000 piculs; and with 35,000 piculs sold but not yet delivered we have supplies sufficient for the consumption of the next four months.

QUOTATIONS FOR ARTICLES OF IMPORT.

GOODS.	PRICES.	GOODS.	PRICES.
Cotton Piece Goods.		WOOLLENS.—Continued.	
Grey Shirtings:—		Sateens (Cotton) „	00.15 to 00.17
7 lbs. 38½ yds. 39 in. per pce.	\$3.07½ to \$2.15	Alpacas 42 yds. 31 in. „	6.50 to 8.60
8 „ „ 44 „ 45 in. „	2.45 to 2.55	Camlet Cords 30 yds. 31 in. „	6.00 to 7.25
8 lbs. 4 to 8 lbs. 6 ditto 39 in. „	2.40 to 2.55	Mousselines de laine, (plain) 30 to 31 in. pryd.	0.15 to 0.90
9 lbs. „ „ 44 in. „	2.85 to 2.95	ditto (printed) „	0.26 to 0.35
White Shirtings:—		Cloth, Medium & Broad 54 in to 64 in „	neglected.
56 to 60 reed 40 yds. 35 in. nominal „	2.50 to 2.60	ditto Union 54 in to 56 in „	
64 to 72 „ ditto „ „ „	2.70 to 2.95	Blankets „ „ limited enquiry per lb.	0.32 to 0.88
T. Cloth:—6 lbs. „ „ „	1.60 to 1.65		
7 „ „ „ „ „	1.90 to 2.00		
Drills, English—15 lbs. „ „ „	3.30 to 3.52½		
Handkerchiefs Assorted „ „ per doz.	0.45 to 0.80		
Brocades & Spots (White) „ „ per pce.	nominal.		
ditto (Dyed) „ „ „			
Chintz (Assorted) 24 yds. 30 in. „	1.50 to 1.80		
Turkey Reds 24 yds. 30 in. 2½ lb. per lb.	no stock.		
Velvets (Black) 35 yds. 22 in. nominal	7.50 to 8.50		
Victoria Lawns 12 yds. 42 in. „ per pce.	0.95 to 1.00		
Taffelclasse single weft 12 yds 43 in „	2.40 to 2.70		
ditto (double weft) „ „	2.70 to 2.95		
Cotton Yarns.		Metals and Sundries.	
No. 16 to 24 „ „ „ „ per picul.	\$7.50 to \$9.25	Iron flat and round „ „ „ per pol	4.00 to 4.50
„ 28 to 32 „ „ „ „ „	\$7.50 to \$9.00	„ nail rod „ „ „ „ „	4.00 to 4.80
„ 38 to 42 „ small stock nom. „	\$2.00 to \$5.00	„ hoop „ „ „ „ „	5.00 nominal
Woollens & Woollen Mixtures.		„ sheet „ „ „ „ „	
Camlets 58 56 to 58 yds. 31 in. Assd. per pce	17.50 to 18.50	„ wire „ „ „ „ „	8.00 to 9.00
ditto Black „ „ „ „ „	17.00	„ pig „ „ „ „ „	
ditto Scarlet „ „ „ „ „	19.00 to 20.00	Lead „ „ „ „ „	Nominal.
Eastings 30 yds. 31. „	14.00 to 16.00	Tin Plates „ „ „ „ „ per box.	8.70 to 8.90
Lustres & Orleans (figured) ditto „ „	5.00 to 5.50	SUGAR.—Formosa in Bag „ „ per picul.	3.80 to 3.95
Orleans 30 yds. 32 in. (plain) ditto „	4.50 to 5.00	in Basket „ „ „ „ „	3.70 to 3.75
Italian Cloth 30 yards 31 inches per yd.	0.25 to 0.28	China No. 1 Ping-fah „	8.20 to 8.30
		do. No. 2 Ching-pak „	7.70 to 8.00
		do. No. 3 Ke-pak „	7.10 to 7.40
		do. No. 4 Kook-fah „	6.60 to 6.80
		do. No. 5 Kong-fuw „	5.90 to 6.30
		do. No. 6 E-pak „	4.90 to 5.30
		Swatow „ „ „ „ „	3.60 to 3.70
		Daitoong „ „ „ „ „	3.70 to 3.80
		Sugar Candy „ „ „ „ „	10.50 to 11.75
		Raw Cotton (Shanghai new) „	13.00 to 13.75
		Rice „ „ „ „ „	3.05

COMMERCIAL INTELLIGENCE.

(Continued.)

Silk.—Since the 22nd instant arrivals are 100 bales and settlements about 250 bales, including some 50 piculs of Raws of the Imperial *Filature* of Tomioka in transit for Lyons.

We have no change to report in prices; but our quotations for best and good Hanks are entirely nominal. The crop is progressing well.

Tea.—Notwithstanding the present high range of prices our Tea market shows great activity, settlements for the closing week amounting to 3,200 piculs.

Prices show a material decline on opening rates, and a drop of from \$10 to \$12 per picul may be quoted; but still this decline is not sufficient for safe operations in any except the finest and choicest parcels as the production of these has naturally some limit; whilst of "fine" and lower grades we may expect further and fuller supplies, which will enforce lower rates on arrival.

The quality of this season's crop so far has been exceedingly satisfactory, most parcels possessing great freshness and fragrance. The leaf of some is a little rough, but this should be compensated for by the excellent quality of the liquor.

To-day's rates close rather weak, natives being willing sellers.

Fine	...	...	...	...	...	...	...	...	...	\$38 to 44.
Finest	...	...	...	...	...	...	...	...	...	\$46 to 49.
Choice	...	...	...	...	...	...	...	...	...	\$50 to 56.

Of lower grades no samples are yet to hand.

The *Vancouver*, which will have speedy despatch, has about 14,000 packages of Tea engaged for all destinations.

EXPORTS.

GOODS.		PRICES.	LAI'D DOWN AND SOLD IN LONDON. Ex 6mos. at 4s. 4½d.	LAI'D DOWN AND SOLD IN LYONS. Ex. at 5.55 @ 6 mos.
Silk:—		per picul		
HANKS.	{ Maebashi and Shinshiu }	Extra none....	\$650.00	25s. 4d.
		Best ...	\$570.00 to \$600.00	22s. 6d. to 23s. 6d.
		Good ...	\$530.00 to \$560.00	21s. 0d. to 22s. 1d.
		Medium ...	\$450.00 to \$500.00	18s. 1d. to 19s. 11d.
OSHIO	Extra	...	\$600.00 to \$620.00	23s. 6d. to 24s. 3d.
	Best	...	\$530.00 to \$580.00	21s. 0d. to 22s. 10d.
	Good	...	\$400.00 to \$440.00	16s. 3d. to 17s. 8d.
	Medium	...	\$380.00 to \$420.00	15s. 6d. to 17s. 0d.
HAMATSKI	...	...	\$430.00 to \$420.00	16s. 3d. to 17s. 0d.
SODAI	Medium	...		
ETCHESSEN	Medium	...		
Tea:—				
Common	...	...
Good Common	...	...
Medium	...	...
Good Medium	...	...
Fine	...	...
Finest	...	...
Choice	...	...
Choicest	...	...
Sundries:—				
Mushrooms...	...	...	\$34.00 to 39.00	
Isinglass	...	...	\$25.00 to 45.00	
Sharks' Fins	...	...	\$23.00 to 42.00	
White Wax...	...	...	\$18.00 to 15.00	
Bees Do.	...	...	\$10.00 to 50.00	
Cuttle fish	...	...	\$10.50 to 11.75	
Dried Shrimps	...	...	\$14.00 to 16.00	
Seaweed, ...	...	...	\$ 1.00 to 3 20	
Gallnut	...	...	\$12.00 to 13.00	
Tobacco	...	...	\$ 6 50 to 12.00	
Sulphur	...	...	\$ 2 20 to 2 90	
Wheat	...	...	\$ 1.60 to 1.85	
Shellfish	...	...	\$17.00 to 31.00	
Camphor	...	...	\$14.00 to 16.00	
Bêche de Mer	...	...	\$35.00 to 50.00	
Ginseng, 50 to 100 pieces	...	...	\$ 3 20 to 5.50	
100 to 200 "	...	...	\$ 2.20 to 3.25	

EXCHANGE AND BULLION.

Exchange.—There has been a fair business doing in Sterling for both Bank and Private Paper during the week, and rates close firm at quotations.

Rates close as follows:—

On London, Bank, 6 Months' Sight.....	4s. 4½d.
" " Bank Bills on demand	4s. 3½d.
" " Credits.....	4s. 4½d.
" Paris, Bank Bills.....	5.54
" " Private	5.53 to 5.60
" Shanghai Bank Bills on demand.....	72
" " Private Bills 10 days sight	72½ nom.

On Hongkong Bank Bills on demand ¼ per cent. prem.	
" " Private Bills 10 ds. sight ¼ per cent discount.	
" San Francisco Bank Bills on demand	103½
" 30 days' sight Private....	105½
" New York Bank Bills on demand...	103½
" 30d. s. Private.....	105½
Gold Yen.....	418
Kinats	418½

MISCELLANEOUS.

Hongkong & Shanghai Banking Corporation.

Paid-up Capital.....5,000,000 Dollars.
Reserve Fund1,000,000 Dollars.

COURT OF DIRECTORS.

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Deputy Chairman—Hon. R. ROWETT, Esq.

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YOKOHAMA BRANCH.

INTEREST ALLOWED

ON Current Deposit Accounts at the rate of 2 per cent. per Annum on the daily balance.

ON FIXED DEPOSITS:—

For 3 Months.....	3 per cent. per Annum.
" 6 "	4 per cent. " "
" 12 "	5 per cent. " "

Local Bills Discounted.

CREDITS granted on approved Securities, and every description of Banking and Exchange Business transacted.

DRAFTS granted on London, and the Chief Commercial places in Europe, India, Australia, America, China and Japan.

HERBERT COPE,

Acting Manager.

Yokohama, May 1, 1874.

NOTICE.

THE co-partnership hitherto existing in Japan between GEORGE HURLBUT, W. J. BLYDENBURGH, S. E. HUNTINGTON and J. C. HEITMANN under the style and firm of SMITH, ARCHER & Co., is this day dissolved by mutual consent.

Mr. W. J. CRUICKSHANK will sign in *Liquidation*.

SMITH, ARCHER & Co.

Yokohama, May 11, 1874.

2ms.

Reuter's Telegram Company, (LIMITED.)

THE Undersigned is prepared to receive messages for transmission to any part of the World to which there is telegraphic communication from Japan. Passengers wishing to telegraph their safe arrival in Europe from this, can do so on payment at this office of the sum of \$8. Arrangements are being made to extend this system to other countries.

E. L. B. McMAHON,
Agent, No. 32.

Yokohama, April 25, 1874.

tf.

MISCELLANEOUS.

J. THOMPSON & Co.

BEG respectfully to announce that, until their new premises are erected,

Messrs. North & Co.

Have kindly undertaken the management of their business. All orders, prescriptions, &c. sent to their Dispensary will receive the same careful attention as heretofore.

Yokohama, March 30, 1874.

tf.

ABEL GUÉRINEAU,

ARCHITECT ET INGÉNIEUR CIVIL,

ELÈVE DIPLOMÉ

DE L'ÉCOLE DES BEAUX ARTS DE PARIS,

TEMPORARY OFFICES

NO. 32.

Yokohama, May 16, 1874.

d. & w. tf.

J. SMEDLEY,

Architect and Civil Engineer.

No. 32, Ground Floor.

Yokohama, March 14, 1874.

tf.

FRAUD.

On the 27th June, 1866, MOTEEWALLAH, a Printer, was convicted at the Supreme Court, Calcutta, of counterfeiting the

LABELS

Of Messrs. CROSSE & BLACKWELL,

London, and was sentenced by Mr. Justice Phear to

TWO YEARS RIGOROUS IMPRISONMENT;

And on the 30th of the same month, for

SELLING SPURIOUS ARTICLES

bearing Labels in imitation of Messrs. CROSSE & BLACKWELL'S SHAIK BACHOO was sentenced, by the Suburban Magistrate at Sealdah, to

TWO YEARS RIGOROUS IMPRISONMENT.

CAUTION.—Any one selling spurious oilmen's stores, under Crosse & Blackwell's name, will be liable to the same punishment, and will be vigorously prosecuted. Purchasers are recommended to examine all goods carefully upon taking delivery of them, and to destroy all bottles and jars when emptied. The GENUINE Manufactures, the corks of which are all branded with Crosse & Blackwell's name, may be had from EVERY RESPECTABLE DEALER in India.

Yokohama, May 27, 1873.

12ms.

CAUTION.

BETTS'S PATENT CAPSULES.

—:O:—

The public are respectfully cautioned that BETTS'S Patent Capsules are being Infringed.

BETTS'S name is upon every Capsule he makes for the leading Merchants at home and abroad,

and he is the ONLY INVENTOR and SOLE MAKER in the United Kingdom.

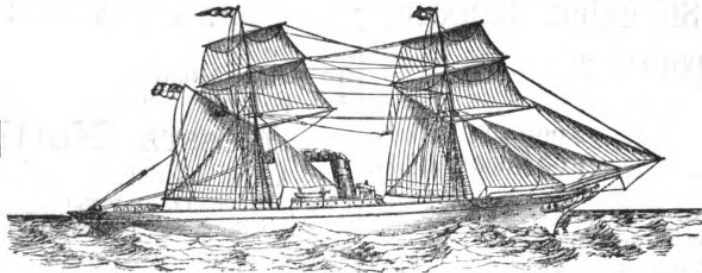
Manufactories:—1, Wharf-road, City-road, London, and Bordeaux, France.

Yokohama, 6th July, 1873.

12ms.

MISCELLANEOUS.

IRON
STEAM
AND



SAIL-
ING
SHIPS.

COLE BROTHERS,

NEWCASTLE-ON-TYNE, ENGLAND,

Builders of all Classes of Iron Vessels up to the largest Dimensions.

TUGS, BARGES, &c.,

July 18, 1873.

IRON AND WOOD SHIPS REPAIRED.

52 ins.

**THE GREATEST WONDER OF MODERN
TIMES!
HOLLOWAY'S PILLS.**

THESE famous and unrivalled Pills act most powerfully, yet soothingly on the liver and stomach, giving tone, energy, and vigour to these great main springs of life. Females of all ages will find them in all cases to be depended upon. Persons suffering from weak or debilitated constitutions will discover that by the use of this wonderful medicine there is "Health for all." Blood is the fountain of life, and its purity can be maintained by the use of these Pills.

Sir Samuel Baker, in his work entitled "The Nile Tributaries in Abyssinia," speaks of the Pills in the highest terms.

Mr. J. T. Cooper, in his famous "Travels in China," says that when money could not procure for him his necessary requirements, he could always get his wants supplied in exchange for "Holloway's Pills."

**THE GREAT CURE ALL!
HOLLOWAY'S OINTMENT.**

Is a certain remedy for bad legs, bad breasts, and ulcerations of a kind. It acts miraculously in healing ulcerations, curing skin diseases and in arresting and subduing all inflammations. Rubbed on the neck and chest, it exerts the most beneficial influence over asthma, shortness of breath, sore throats, bronchitis, diphtheria, coughs, and colds. In the cure of gout, rheumatism, glandular swellings, and stiff joints, it has no equal. In disorders of the kidneys the Ointment should be most effectually rubbed over the seat of those organs.

THE "MOFUSSIL GUARDIAN,"

Of August 31st, 1872, states that a severe case of that dreadful plague "dengue" was cured in a few hours, by well rubbing the body with Holloway's Ointment.

These remedies are only prepared by the Proprietor, THOMAS HOLLOWAY, 533, Oxford Street, London. Beware of counterfeits that may emanate from the United States.

Yokohama, September 27, 1873.

52 ins.

**GEORGE FLETCHER & Co.,
BETTS STREET, ST. GEORGE'S EAST, LONDON,**

AND

MASSON WORKS, DERBY.

Established over Thirty years as

**MAKERS OF EVERY DESCRIPTION OF MACHINERY FOR
SUGAR PLANTATIONS AND REFINERIES,**

and well known all over the world.

Also the ORIGINAL PATENTEES of the MULTITUBULAR
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Multitubular and other Steam

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Condensing and High Pressure

Steam Engines.

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Wrought Iron Waterwheels.

Horizontal and Vertical Sugar

Mills of every description, with

suitable gearing.

Cane-juice Pumps.

Tubular and other steam Clari-

fiers.

Sugar Pans, Coolers, &c.

Granulating Pans of every de-

scription.

Also small Plants (clarifiers and Sugar Boilers extra) to make 2½ tons

per day of 12 hours, for £770.

Yokohama, March 21, 1874.

tf.

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EXPORT & GENERAL STATIONERS.**

ACCOUNT BOOK MANUFACTURERS,

DIE SINKERS,

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LETTER PRESS, LITHOGRAPHIC AND COPPERPLATE
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BY SPECIAL APPOINTMENT TO H. M. THE QUEEN,

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Yokohama, May 10, 1874.

26ins.

**BURGOYNE, BURBIDGES & Co.,
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MANUFACTURERS of every description of CHEMICAL, PHARMACEUTICAL, PHOTOGRAPHIC, and other PREPARATIONS. OIL PRESSERS, DISTILLERS OF ESSENTIAL OILS, DEALERS in Patent Medicines, SURGICAL INSTRUMENTS and Appliances, Glass Ware, Confectionery, Medical Books, and Shop Fittings, and every description of Druggists' Sundries, Paints, Colours, Dyes, &c., &c.

Upon application, Messrs. BURGOYNE, BURBIDGES & Co. will forward their Price Current, containing more than Twenty Thousand prices.

Messrs. BURGOYNE, BURBIDGES & Co. are thoroughly conversant with the Japan Markets, and are prepared to receive commission orders for any articles of British Manufacture, and having made this an important branch of their business, they are enabled to select the cheapest and best goods, securing the extremest discounts; they likewise receive consignments of produce.

Yokohama, June 21, 1873.

52ins.